WORLDS OF TOMORROW

FEBRUARY 1967

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by KEITH LAUMER

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WORLDS OF TOMORROW®

FEBRUARY 1967
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ALL NEW STORIES

CONTENTS

NOVELETTES

THE STAR-PIT 7
by Samuel R. Delany

THE PLANET WRECKERS 73
by Keith Laumer

THE FIFTH COLUMBIAD 125
by Richard C. Meredith

SHORT STORY

STATION HR972 101
by Kenneth Bulmer

ARTICLES

SUN GRAZERS 94
by Robert S. Richardson

THE SHAPE OF SHAPES TO COME 115
by Robert Bartlett Riley

FEATURE

ABOUT 2001 110
by David A. Kyle

DEPARTMENTS

EDITORIAL 6
by Frederik Pohl

THE PSYCHIATRIC SYNDROME IN SCIENCE FICTION 58
by Sam Moskowitz

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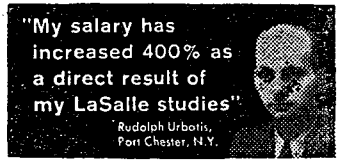

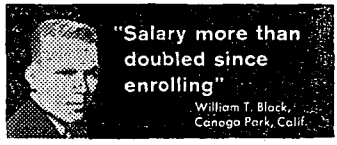

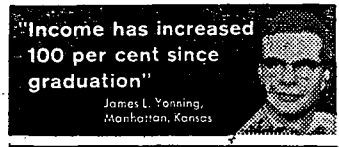

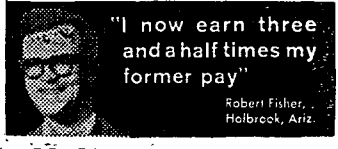

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THE DYSON WORLDS

If Project Ozma ever gets going again, and we open our ears to the messages that may (or may not!) be coming toward us from elsewhere in the galaxy, a couple of astrophysicists have come up with a notion that may be worth following up about which direction we should look in for extra-solar friends.

We start — or Freeman Dyson, after whom such worlds are named, does — with the assumption that the sort of non-human civilization that might be sending messages will be enough like us to use large quantities of energy. In fact, we might well assume that they will use *very* large quantities of energy — much more than we do, since it would be most interesting to find an alien race that is farther along technologically than we are, in the hope that we just might learn something from them that we don't already know.

Let's suppose, in fact, that they are so highly developed that they want to use *all* the energy they can get their hands, or pseudopods, on, including not just the part of their own sun's radiation that happens to fall on the surface of their home planet, but all of it.

Clearly one thing they might try would be to rearrange the matter in their planetary system so that, instead of a few blobs of planets and asteroids circling the star in a single ecliptic plane, they form a spherical shell around the sun itself. That way no energy would be lost. Everything the star's nuclear furnaces produce will be trapped and used; and only the degraded waste of low-level heat will be reradiated from the outside shell to the universe at large.

Such a shell, say scientists Carl Sagan and Russell Walker, ought to be visible from Earth up to a range of some thousands of light-years. It would radiate in the infrared, at a temperature perhaps roughly the same as that of the air around you, and would go through our own atmospheric "windows" reasonably well.

Such a shell would not look much like an ordinary star, with its surface temperature in the thousands of degrees, and even less like a planet — the temperature would be all right, but the size would be wildly wrong. It is true that a new star, still coalescing out of gas, might look somewhat the same — but at least there is a finite number of such objects, and it wouldn't really be too hard to point a radio array at each of them.

If we didn't hear anything, we wouldn't have lost much . . . but, ah! if we did. . . . —*The Editor*

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THE STAR-PIT

by SAMUEL R. DELANY

Illustrated by GAUGHAN

We were trapped in the tiny, billion-star backyard of our own galaxy — while the golden roamed the universe!

I

Two glass panes with dirt in between and little tunnels from cell to cell: when I was a kid I had an ant-colony.

But once some of our four-to-six-year-olds built an ecologarium with six-foot plastic panels and grooved aluminum bars to hold the corners and the top down. They put it out on the sand.

There was a mud puddle against one wall so you could see what was going on under water. Sometimes segment worms crawling through the reddish earth hit the side so their tunnels were visible for a few inches. In hot weather the inside of the plastic got coated with mist and droplets. The small round leaves on the litmus vines changed from blue to pink, blue to pink as clouds coursed the sky and the pH of the photosensitive soil shifted slightly.

The kids would run out before dawn and belly down naked in the cool sand with their chins on the

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backs of their hands and stare in the half-dark till the red mill wheel of Sigma lifted over the bloody sea. The sand was maroon then, and the flowers of the crystal plants looked like rubies in the dim light of the giant sun. Up the beach the jungle would begin to whisper while somewhere an ani-wort would start warbling. The kids would giggle and poke each other and crowd closer.

Then Sigma-prime, the second member of the binary, would flare like thermite on the water, and crimson clouds would bleach from coral, through peach, to foam-white. The kids, half on top of each other, lay now like a pile of copper ingots with sun streaks in their hair — even on little Antoni, my oldest, whose hair was black and curly like bubbling oil (like his mother's); the down on the small of his two-year-old back was a white haze across the copper if you looked that close to see.

More children came to squat and lean on their knees, or kneel with their noses an inch from the walls, to watch, like young magicians, as things were born, grew, matured, and other things were born. Enchanted at their own construction, they stared at the miracles in their live museum.

A small, red seed lay camouflaged in the silt by the lake/puddle. One evening as white Sigma-prime left the sky violet, it broke open into a brown larva as long and of the same color as the first joint of Antoni's thumb. It flipped and swirled in the mud a couple of days, then crawled to the first branch of the nearest crystal plant to hang exhausted, head down from the tip. The brown flesh hardened, thickened, grew black, shiny. Then one morning the children saw the onyx chrysalis crack, and by second dawn there was an emerald-eyed flying lizard buzzing at the plastic panels.

"Oh, look, da!" they called to me. "It's trying to get out!"

The speed-hazed creature butted at the corner for a few days, then settled at last to crawling around the broad leaves of the miniature shade palms.

When the season grew cool and there was the annual debate over whether the kids should put tunics on — they never stayed in them more than twenty minutes anyway — the jewels of the crystal plant misted, their facets coarsened, and they fell like gravel.

There were little four-cupped sloths, too, big as a six-year-old's fist. Most of the time they pressed their velvety bodies against the walls and stared longingly across the sand with their retractable eye-clusters. Then two of them swelled for about three weeks. We thought at first it was some bloating infection. But one evening there were a couple of litters of white, velvet balls half hidden by the low leaves of the shade palms. The parents were occupied now and didn't pine to get out.

There was a rock half in and half out of the puddle, I remember, covered with what I'd always called mustard-moss when I saw it in the wild. Once it put out a brush of white hairs. And one afternoon the children ran to collect all the adults they could drag over. "Look, oh da, da,

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ma, look!" The hairs had detached themselves and were walking around the water's edge, turning end over end along the soft soil.

I had to leave for work in a few minutes and haul some spare drive parts out to Tau Ceti. But when I got back five days later, the hairs had taken root, thickened, and were already putting out the small round leaves of litmus vines. Among the new shoots, lying on her back, claws curled over her wrinkled belly, eyes cataracted like the foggy jewels of the crystal plant — she'd dropped her wings like cellophane days ago — was the flying lizard. Her pearl throat still pulsed, but as I watched, it stopped. Before she died, however, she had managed to deposit, nearly camouflaged in the silt by the puddle, a scattering of red seeds.

I remember getting home from another job where I'd been doing the maintenance on the shuttle-boats for a crew putting up a ring station to circle a planet that was itself circling Aldebaran. I was gone a long time on that one. When I left the landing complex and wandered out toward the tall weeds at the edge of the beach, I still didn't see anybody.

Which was just as well because the night before I'd put on a real winner with the crew to celebrate the completion of the station. That morning I'd taken a couple more drinks at the landing bar to undo last night's damage. Never works.

The swish of frond on frond was like clashed rasps. The sun on the sand reached out two fingers of pure glare and tried to gouge my eyes. I was glad the home-compound was deserted because the kids would have asked questions I didn't want to answer; the adults wouldn't say anything, which was harder to answer than questions.

Then, down by the ecologarium, a child screeched. And screeched again. Then Antoni came hurtling toward me, half running, half on all fours, and flung himself on my leg. "Oh, da! Da! Why, oh why, da?"

I'd kicked my boots off and shrugged my shirt back at the compound porch, but I still had my overalls on. Antoni had two fists full of my pants leg and wouldn't let go. "Hey, kid-boy, what's the matter?"

When I finally got him on my shoulder he butted his blubber wet face against my collar-bone. "Oh, da! Da! It's crazy, it's all craaaa-zy!" His voice rose to lose itself in sobs.

"What's crazy, kid-boy? Tell da."

Antoni held my ear and cried while I walked down to the plastic enclosure.

They'd put a small door in one wall with a two-number combination lock that was suppose to keep this sort of thing from happening. I guess Antoni learned the combination from watching the older kids, or maybe he just figured it out.

One of the young sloths had climbed out and wandered across the sand about three feet.

"See, da! It crazy, it bit me. Bit me, da!" Sobs became sniffles as he showed me a puffy, bluish place on his wrist centered on which was a tiny crescent of pin-pricks. Then he pointed jerkily to the creature.

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It was shivering, and bloody froth spluttered from it's lip flaps. All the while it was digging futilely at the sand with its clumsy cups, eyes retracted. Now it fell over, kicked, tried to right itself, breath going like a flutter valve. "It can't take the heat," I explained, reaching down to pick it up.

It snapped at me, and I jerked back. "Sun stroke, kid-boy. Yeah, it is crazy."

Suddenly it opened its mouth wide, let out all its air, and didn't take in any more. "It's all right now," I said.

Two more of the baby sloths were at the door, front cups over the sill, staring with bright, black eyes. I pushed them back with a piece of sea shell and closed the door. Antoni kept looking at the white fur ball on the sand. "Not crazy now?"

"It's dead," I told him.

"Dead because it went outside, da?"

I nodded.

"And crazy?" He made a fist and ground something already soft and wet around his upper lip.

I decided to change the subject, which was already too close to something I didn't like to think about. "Who's been taking care of you, anyway?" I asked. "You're a mess, kid-boy. Let's go and fix up that arm. They shouldn't leave a fellow your age all by himself." We started back to the compound. Those bites infect easily, and this one was swelling.

"Why it go crazy? Why it die when it go outside, da?"

"Can't take the light," I said as we reached the jungle. "They're animals that live in shadow most of the time. The plastic cuts out the ultra-violet rays, just like the leaves that shade them when they run loose in the jungle. Sigma-prime's high on ultraviolet. That's why you're so good looking, kid-boy. I think your ma told me their nervous systems are on the surface, all that fuzz. Under the ultra-violet, the enzymes break down so quickly that — does this mean anything to you at all?"

"Uh- uh." Antoni shook his head. Then he came out with, "Wouldn't it be nice, da —" he admired his bite while we walked " — if some of them could go outside, just a few?"

That stopped me. There were sunspots on his blue black hair. Fronds reflected faint green on his brown cheek. He was grinning, little, and wonderful. Something that had been anger in me a lot of times momentarily melted to raging tenderness, whirling about him like the dust in the light striking down at my shoulders, raging to protect my son. "I don't know about that, kid-boy."

"Why not?"

"It might be pretty bad for the ones who had to stay inside," I told him. "I mean after a while."

"Why?"

I started walking again. "Come on, let's fix your arm and get you cleaned up."

I washed the wet stuff off his face, and scraped the dry stuff from beneath it which had been there at least two days. Then I got some antibiotic into him.

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"You smell funny, da."

"Never mind how I smell. Let's go outside again." I put down a cup of black coffee too fast, and it and my hangover had a fight in my stomach. I tried to ignore it and do a little looking around. But I still couldn't find anybody. That got me mad. I mean he's independent, sure: he's mine. But he's still only two.

II

Back on the beach we buried the dead sloth in the sand, then I pointed out the new, glittering stalks of the tiny crystal plants. At the bottom of the pond, in the jellied mass of ani-wort eggs you could see the tadpole forms quivering already. An orange-fringed shelf fungus had sprouted nearly eight inches since it had been just a few black spores on a pile of dead leaves a few weeks back.

"Grow up," Antoni chirped with nose and fists against the plastic. "Everything grow up, and up."

"That's right."

He grinned at me. "I grow!"

"You sure as hell do."

"You grow?" Then he shook his head, twice: once to say no, and the second time because he got a kick from shaking his hair around — there was a lot of it. "You don't grow. You don't get any bigger. Why don't you grow?"

"I do too," I said indignantly. "Just very slowly."

Antoni turned around, leaned on the plastic and moved one toe at a time in the sand — I can't do that — watching me.

"You have to grow all the time," I said. "Not necessarily get bigger. But inside your head you have to grow, kid-boy. For us human-type people that's what's important. And that kind of growing never stops. At least it shouldn't. You can grow, kid-boy, or you can die. That's the choice you've got, and it goes on all your life."

He looked back over his shoulder. "Grow up, all the time, even if they can't get out."

"Yeah," I said. And was uncomfortable all over again. I started pulling off my overalls for something to do. "Even —" The zipper got stuck. "God *damn* it! — if you can't get out." *Rnrnrnrnrnrn* — it came loose again.

The rest got back that evening. They'd been on a group trip around the foot of the mountain. I did a little shouting to make sure my point got across about leaving Antoni alone. Didn't do much good. You know how family arguments go:

He didn't want to come. We weren't going to force —

So what. He's got to learn to do things he doesn't want —

Like some other people I could mention!

Now look —

It's a healthy group. Don't you want him to grow up health —

I'll be happy if he just grows up period. No food, no medical —

But the server was chock full of food. He knows how to use it.

Look, when I got home the kid's arm was swollen all the way up to his elbow!

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And so on and so forth, with Antoni sitting in the middle, looking confused. When he got confused enough, he ended it all by announcing matter-of-factly, "Da smell funny when he came home."

Every one got quiet. Then someone said, "Oh, Vyme, you didn't come home that way again! I mean, in front of the children."

I said a couple of things I was sorry for later and stalked off down the beach on a four-mile hike.

Times I got home from work? The ecologarium? I guess I'm just leading up to this one.

The particular job had taken me a hectic week to get. It was putting back together a battleship that was gutted somewhere off Aurigae. Only when I got there, I found I'd been already laid off. That particular war was over — they're real quick now. So I scraped and lied and browned my way into a repair gang that was servicing a traveling replacement station, generally had to humiliate myself to get the job because every other drive mechanic from the battleship fiasco was after it too. Then I got canned the first day because I came to work smelling funny. It took me another week to hitch a ride back to Sigma. Didn't even have enough to pay passage, but I made a deal with the pilot I'd do half the driving for him.

We were an hour out, and I was at the controls when something I'd never heard of happening, happened. We came *this* close to ramming another ship. Consider how much empty space there is; the chances are infinitesimal. And on top of that

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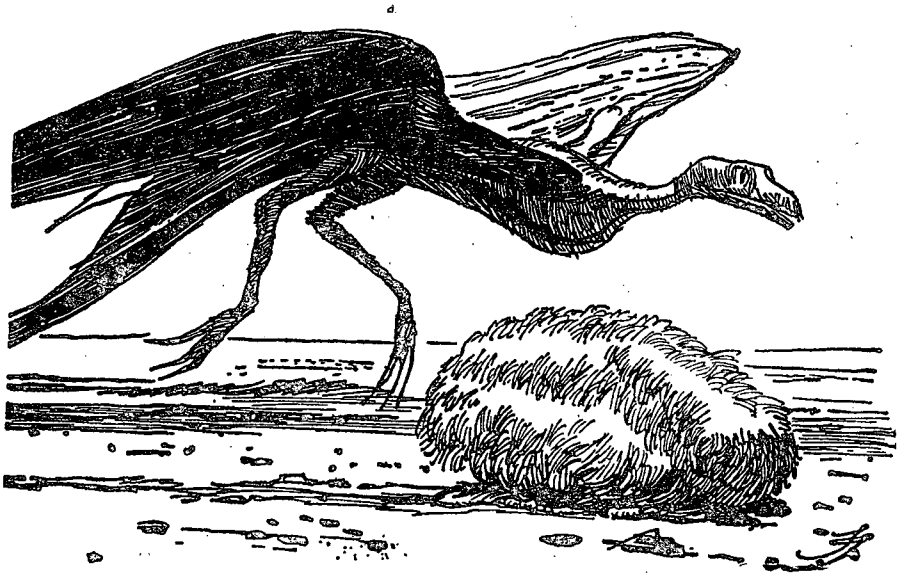

every ship should be broadcasting an identification beam at all times.

But this big, bulbous keeler-intergalactic slid by so close I could *see* her through the front viewport. Our inertia system went nuts. We jerked around in the stasis whirl from the keeler. I slammed on the video-intercom and shouted, "You great big stupid . . . *stupid* . . ." so mad and scared I couldn't say anything else.

The golden piloting the ship stared at me from the viewscreen with mildly surprised annoyance. I remember his face was just slightly more negroid than mine.

Our little Serpentina couldn't hurt him. But had we been even a hundred meters closer we might have ionized. The other pilot came bellowing from behind the sleeper curtain and started cursing me out.

"Damn it," I shouted, "it was one of those . . ." and lost all the profanity I know to my rage, ". . . golden . . ."

"This far into galactic center? Come off it. They should be hanging out around the star-pit!"

"It was a keeler drive," I insisted. "It came right in front of us." I stopped because the control stick was shaking in my hand. You know the Serpentina colophon? They have it in the corner of the view screen and raised in plastic on the head of the control knobs on the ship. Well, it got pressed into the ham of my thumb so you could make it out for an hour, I was squeezing that control rod that tight.

When he set me down, I went straight to the bar to cool off.

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And got in a fight. When I reached the beach I was broke, I had a bloody nose, I was sick, and furious.

It was just after first sunset, and the kids were squealing around the ecologarium. Then one little girl I didn't even recognize ran up to me and jerked my arm. "Da, oh, da! Come look! The ani-worts are just about to —"

I pushed her, and she sat down, surprised, on the sand.

I just wanted to get to the water and splash something cold on my face, because every minute or so it would start to burn.

Another bunch of kids grabbed me, shouting, "Da, da, the ani-worts, da!" and tried to pull me over.

First I took two steps with them. Then I just swung my arms out. I didn't make a sound. But I put my head down and barreled against the plastic wall. Kids screamed. Aluminum snapped, the plastic cracked and went down. My boots were still on, and I kicked and kicked at red earth and sand. Shade palms went down and the leaves tore under my feet. I remember the stems of the crystal plants broken like glass rods beneath a piece of plastic. A swarm of lizards buzzed up around my head. Some of the red was Sigma, some was what burned behind my face.

I remember I was still shaking and watching water run out of the broken lake over the sand, then soak in so that the wet tongue of sand expanded a little, raised just a trifle around the edge. Then I looked up to see the kids coming back down the beach, crying, shouting, afraid and clustered around Antoni's ma. She walked steadily toward me — steady because she was a woman and they were children. But I saw the same fear in her face. Antoni was on her shoulder. Other grownups were coming behind her.

Antoni's ma was a biologist, and I think she had suggested the ecologarium to the kids in the first place. When she looked up from the ruin I'd made, I knew I'd broken something of hers too.

An odd expression got caught in the features of her — I remember it oh so beautiful — face, with compassion alongside the anger, contempt alongside the fear. "Oh, for pity's sake, Vyme," she cried, not loudly at all. "Won't you ever grow up?"

I opened my mouth, but everything I wanted to say was too big and stayed wedged in my throat.

"Grow up?" Antoni repeated and reached for a lizard that buzzed his head. "Everything stop growing up, now." He looked down again at the wreck I'd made. "All broken. Everything get out."

"He didn't mean to break it," she said to the others for me, then knifed the gratitude I felt toward her with a look. "We'll put it back together."

She put Antoni on the sand and picked up one of the walls.

After they got started, they let me help. A lot of the plants were broken. And only the ani-worts who'd completed metamorphosis could be saved. The flying lizards were too curious to get far away, so we — they netted them and got them back

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inside. I guess I didn't help that much. And I wouldn't say I was sorry.

They got just about everything back except the sloths.

We couldn't find them at all, no matter how long we searched.

The sun was down so they should have been all right. They can't negotiate the sand with any speed so couldn't have reached the jungle. But there were no tracks, no nothing. We even dug in the sand to see if they'd buried themselves. Never did find them, though. It wasn't till more than a dozen years later I discovered where they went.

For the present I accepted Antoni's mildly adequate, "They just must of got out again."

Not too long after that I left the procreation group. Went off to work one day, didn't come back. But like I said to Antoni, you either grow or die. I didn't die.

Once I considered returning. But there was another war, and suddenly there wasn't anything to return to. Some of the group got out alive. Antoni and his ma didn't. I mean there wasn't even any water left on the planet.

When I finally came to the Star-pit, myself, I hadn't had a drink in years. But working there out on the galaxy's edge did something to me — something to the part that grows I'd once talked about on the beach with Antoni.

If it did it to me, it's not surprising it did it to Ratlit and the rest.

(And I remember a black-eyed creature pressed against the plastic wall, staring across impassable sands.)

Perhaps it was knowing this was as far as you could go.

Perhaps it was the golden.

III

Golden? I hadn't even joined the group yet when I first heard the word. I was sixteen and a sophomore at Luna Vocational. I was born in a city called New York on a planet called Earth. Luna is its one satellite. You've heard of the system, I'm sure; that's where we all came from. A few other things about it are well known. Unless you're an anthropologist, though, I doubt you've ever been there. It's way the hell off the main trading routes and pretty primitive. I was a drive-mechanics major, on scholarship, living in and studying hard. All morning in Practical Theory (a ridiculous name for a ridiculous class, I thought then) we'd spent putting together a model keeler intergalactic drive. Throughout those dozens of helical inserts and superinertia organus sensitives, I had been silently cursing my teacher, thinking, about like everyone else in the class, "So what if they can fly this jalopy from one galaxy to another. Nobody will ever be able to ride in them. Not with the Physic and Physiologic shells hanging around this cluster of the Universe."

Back in the dormitory I was lying on my bed, scraping graphite lubricant from my nails with the end of my slide rule and half reading at a folded-back copy of *The Young*

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Mechanic when I saw the article and the pictures.

Through some freakish accident, two people had been discovered who didn't crack up at twenty thousand light-years off the galactic rim, who didn't die at twenty-five thousand.

They were both psychological freaks with some incredible hormone imbalance in their systems. One was a little oriental girl; the other was an older man, blond and big boned, from a cold planet circling Cygnus-beta: golden. They looked sullen as hell, both of them.

Then there were more articles, more pictures, in the economic journals, the sociology student-letters, the legal bulletins, as various fields began acknowledging the impact that the golden and the sudden birth of intergalactic trade were having on them. The head of some commission summed it up with the statement: "Though interstellar travel has been with us for three centuries, intergalactic trade has been an impossibility, not because of mechanical limitations, but rather because of barriers that till now we have not even been able to define. Some psychic shock causes insanity in any human — or for that matter, any intelligent species or perceptual machine or computer — that goes more than twenty thousand light-years from the galactic rim; they complete physiological death, as well as recording breakdown in computers that might replace human crews. Complex explanations have been offered, none completely satisfactory, but the base of the problem seems to be this: as the nature of space and time are relative to the concentration of matter in a given area of the continuum, the nature of reality itself operates by the same, or similar laws. The averaged mass of all the stars in our galaxy controls the 'reality' of our microsector of the universe. But as a ship leaves the galactic rim, 'reality' breaks down and causes insanity and eventual death for any crew, even though certain mechanical laws — though not all — appear to remain, for reasons we don't understand, relatively constant. Save for a few barbaric experiments done with psychedelics at the dawn of spatial travel, we have not even developed a vocabulary that can deal with 'reality' apart from its measurable, physical expression. Yet, just when we had to face the black limit of intergalactic space, bright resources glittered within. Some few of us whose sense of reality has been shattered by infantile, childhood, or prenatal trauma, whose physiological and psychological orientation makes life in our interstellar society painful or impossible — not all, but a few of these golden . . ." at which point there was static, or the gentleman coughed, ". . . can make the crossing and return."

The name golden, *sans* noun, stuck.

A few was the understatement of the millenium. Slightly less than one human being in thirty-four thousand is a golden. A couple of people had pictures of emptying all mental institutions by just shaking them out over the galactic rim. Didn't work like that. The particular psychosis

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and endocrine setup was remarkably specialized. Still, back then there was excitement, wonder, anticipation, hope, admiration in the word: admiration for the ones who could get out.

"Golden?" Ratlit said when I asked him. He was working as a grease monkey out here in the Star-pit over at Poloscki's. "Born with the word. Grew up with it. Weren't no first time for me. Though I remember when I was about six, right after the last of my parents had been killed, and I was hiding out with a bunch of other lice in a broke-open packing crate in an abandoned freight yard near the ruins of Helios on Creton VII — that's where I was born, I think. Most of the city had been starved out by then, but somebody was getting food to us. There was this old crook-back character who was hiding too. He used to sit on the top of the packing crate and bang his heels on the aluminum slats and tell us stories about the stars. Had a couple of rags held with twists of wire for clothes, missing two fingers off one hand; he kept plucking the loose skin under his chin with those grimy talons. And he talked about them. So I asked, 'Golden what, sir?' He leaned forward so that his face was like a mahogany bruise on the evening, and croaked, 'They've been *out,* I tell you, seen more than ever you or I. Human and inhuman, kid-boy, mothered by women and fathered by men, still they live by their own laws and walk their own ways!'" Ratlit and I were sitting under a street lamp with our feet over the Edge where the fence had broken. His hair was like breathing flame in the wind, his single earring glittered. Star-flecked infinity dropped away below our boot soles, and the wind created by the stasis field that held our atmosphere down — we call it the 'world-wind' out here because it's never cold and never hot and like nothing on any world — whipped his black shirt back from his bony chest as we gazed on galactic night between our knees. "I guess that was back during the second Kyber war," he concluded.

"Kyber war?" I asked. "Which one was that?"

He shrugged. "I just know it was fought over possession of couple of tons of di-allium, that's the polarized element the golden brought back from Lupe-galaxy. They used y-adna ships to fight it — that's why it was such a bad war. I mean worse than usual."

"Y-adna? That's a drive I don't know anything about."

"Some golden saw the plans for them in a civilization in Magellanic-9."

"Oh," I said. "And what was Kyber?"

"It was a weapon, a sort of fungus the golden brought back from some overrun planet on the rim of Andromeda. It's deadly. Only they were too stupid to bring back the antitoxin."

"That's golden for you."

"Yeah. You ever notice about golden, Vyme? I mean just the word. I found out all about it from my publisher, once. It's semantically unsettling."

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"Really?" I said. "So are they. Unsettling I mean."

I'd just finished a rough, rough day installing a rebuilt keeler in a quantum transport hull that just wasn't big enough. The golden having the job done stood over my shoulder the whole time, and every hour he'd come out with the sort of added instruction that would make the next sixty-one minutes miserable. But I did it. The golden paid me in cash and without a word climbed into the lift, and two minutes later, while I was still washing the grease off, the damn five-hundred-ton hulk began to whistle for take-off. Sandy, a young fellow who'd come looking for a temporary mechanic's job three months back, but hadn't given me cause to fire him yet, barely had time to pull the big waldoes out of the way and go scooting into the shock chamber when the three hundred meter doofus tore loose from the grapplers. And Sandy, who, like a lot of these youngsters drifting around from job to job, is usually sort of quiet and vague, got loud and specific. ". . . two thousand pounds of non-shock proof equipment out there . . . ruin it all if he could . . . I'm not expendable, I don't care what a . . . these golden out here . . ." while the ship hove off where only the golden go. I just flipped on the "not-open" sign, left the rest of the grease where it was, left the hangar and hunted up Ratlit.

So there we were, under that street lamp, sitting on the Edge, in the world-wind.

"Golden," Ratlit said under the roar. "It would be much easier to take if it were grammatically connected to something: golden ones, golden people. Or even one gold, two golden."

"Male golden, female goldine?" I suggested.

"Something like that. It's not an adjective, it's not a noun. My publisher told me that for a while it was written with a dash after it that stood for whatever it might modify."

I remembered the dash. It was an uneasy joke, a fill-in for that cough. Golden *what?* People had already started to feel uncomfortable. Then it went past joking and back to just "golden."

"You illiterates always want to mess up the language," Ratlit chided. "Just think about that, Vyme. Just golden, one, two, or three of them."

"That's something to think about, kid-boy," I said.

Ratlit had been six during the Kyber war. Square that and add it once again for my age now. Ratlit's? Double six and add one. I like kids, and they like me. But that may be because my childhood left me a lot younger at forty-two than I should be. Ratlit's had left him a lot older than any thirteen-year-old has a right to be.

"No golden took part in the war," Ratlit said.

"They never do." I watched his thin fingers get all tangled together.

After two divorces, my mother ran off with a salesman and left me and four siblings with an alcoholic aunt for a year. Yeah, they still have

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divorces, monogamous marriages and stuff like that where I was born. Like I say, it's pretty primitive. I left home at fifteen, made it through vocational school on my own, and learned enough about what makes things fly to end up — after that disastrous marriage I told you about earlier — with my own repair hangar on the Star-pit.

Compared with Ratlit I had a stable childhood.

That's right, he lost the last parent he remembered when he was six. At seven he was convicted of his first felony — after escaping from Cretan VII. But part of his treatment at hospital *cum* reform school *cum* prison was to have the details lifted from his memory. "Did something to my head back there. That's why I never could learn to read, I think." For the next couple of years he ran away from one foster group after the other. When he was eleven, some guy took him home from Play Planet where he'd been existing under the boardwalk on discarded hot dogs, soublakia, and phelafel. "Fat, smoked perfumed cigarettes; name was Vivian?" Turned out to be the publisher. Ratlit stayed for three months during which time he dictated a novel to Vivian. "Protecting my honor," Ratlit explained. "I had to do *something* to keep him busy."

The book sold a few hundred thousand copies as a precocious curiosity among many. But Ratlit had split. The next years he was involved as a shill in some illegality I never understood. He didn't either. "But I bet I made a million, Vyme! I earned at least a million." It's possible. At thirteen he still couldn't read or write, but his travels had gained him fair fluency in three languages. A couple of weeks ago he'd wandered off a stellar tramp, dirty and broke, here at the Star-pit. And I'd gotten him a job as grease monkey over at Poloscki's.

He leaned his elbows on his knees, his chin in his hands. "Vyme, it's a shame."

"What's a shame, kid-boy?"

"To be washed up at my age. A has-been! To have to grapple with the fact that this —" he spat at a star — "is it."

He was talking about golden again.

"You still have a chance." I shrugged. "Most of the time it doesn't come out till puberty."

He cocked his head up at me. "I've been pubescent since I was nine, buster."

"*Excuse* me."

"I feel cramped in, Vyme. There's all that night out there to grow up in, to explore."

"There was a time," I mused, "when the whole species was confined to the surface, give or take a few feet up or down, of a single planet. You've got a whole galaxy to run around in. You've seen a lot of it, yeah. But not all."

"But there are billions of galaxies out there. I want to see them. In all the stars around here there hasn't been one life form discovered that's based on anything but silicon or carbon. I overheard two golden in a bar once, talking: there's something

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in some galaxy out there that's as big as a star, neither alive nor dead, and sings. I want to hear it, Vyme!"

"Ratlit, you can't fight reality."

"Oh, go to sleep, grandpa!" He closed his eyes and bent his head back until the cords of his neck quivered. "What is it that makes a golden? A combination of physiological and psychological . . . what?"

"It's primarily some sort of hormonal imbalance as well as an environmentally conditioned thalamic/personality response."

"Yeah. Yeah." His head came down. "And that X-chromosome heredity nonsense they just connected up with it a few years back. But all I know is *they* can take the stasis shift from galaxy to galaxy, where you and I, Vyme, if we get more than twenty thousand light-years off the rim, we're dead."

"Insane at twenty thousand," I corrected. "Dead at twenty-five."

"Same difference." He opened his eyes. They were large, green and mostly pupil. "You know I stole a golden belt? Rolled it off a staggering slob about a week ago who came out of a bar and collapsed on the corner. I went across the Pit to Calle-J where nobody knows me and wore it around for a few hours, just to see if I felt different."

"You did?" Ratlit had lengths of gut that astounded me about once a day.

"I didn't. But people walking around me did. Wearing that two-inch band of yellow metal around my waist, nobody in the worlds could tell I wasn't a golden, just walking by on the street, without talking to me a while, or making hormone tests. And wearing that belt, I learned just how much I hated golden. Because I could suddenly see, in almost everybody who came by, how much they hated me while I had that metal belt on. I threw it over the Edge." Suddenly he grinned. "But maybe I'll steal another one."

"You really hate them, Ratlit?"

He narrowed his eyes at me and looked superior.

"Sure, I talk about them," I told him. "Sometimes they're a pain to work for. But it's not their fault we can't take the reality shift."

"I'm just a child," he said evenly, "incapable of such fine reasoning. *I* hate them." He looked back at the night. "How can you stand to be trapped by anything, Vyme?"

IV

Three memories crowded into my head when he said that.

First: I was standing at the railing of the East River — runs past this New York I was telling you about — at midnight, looking at the illuminated dragon of the Manhattan Bridge that spanned the water, then at the industrial fires flickering in bright, smoky Brooklyn, and then at the template of mercury street lamps behind me bleaching out the playground and most of Houston Street; then, at the reflections in the water, here like crinkled foil, there like glistening rubber; at last, looked up at the midnight sky itself. It wasn't black but dead pink, without a star. This glittering world made the sky a roof that pressed down on

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me so I almost screamed . . . That time the next night I was twenty-seven light-years away from Sol on my first star-run.

The second, I was visiting my mother after my first few years out. I was looking in the closet for something when this contraption of plastic straps and buckles fell on my head. "What's this, ma?" And she smiled with a look of idiot nostalgia and crooned, "Why that's your little harness, Vymey. Your first father and I would take you on picnics up at Bear Mountain and put you in that and tie you to a tree with about ten feet of cord so you wouldn't get lost." I didn't hear the rest because of the horror that suddenly flooded me, thinking of myself tied up in that thing. Okay, I was twenty and had just joined that beautiful procreation-group a year back on Sigma and was the proud father of three and expecting two more. The hundred and sixty-three of us had the whole beach and nine miles of jungle and half a mountain to ourselves; maybe I was seeing Antoni caught up in that thing, trying to catch a bird or a beetle or a wave — with only ten feet of cord. I hadn't worn clothes for anything but work in a twelvemonth, and I was chomping to get away from that incredible place I had grown up in called an apartment and back to wives, husbands, kids and civilization. Anyway, it was pretty terrible.

The third was after I had left the proce-group — fled them, I suppose, guilty and embarrassed over something I couldn't name, still having nightmares once a month that woke me screaming about what was going to happen to the kids, even though I knew one point of group marriage was to prevent the loss of one, two, or three parents being traumatic — still wondering if I wasn't making the same mistakes my parents made, hoping my brood wouldn't turn out like me, or worse like the kids you sometimes read about in the paper (like Ratlit, though I hadn't met him yet), horribly suspicious that no matter how different I tried to be from my sires, it was just the same thing all over again . . . Anyway, I was on the ship bringing me to the Star-pit for the first time. I'd gotten talking to a golden who, as golden go, was a pretty regular gal. We'd been discussing inter- and intragalactic drives. She was impressed I knew so much. I was impressed that she could use them and know so little. She was digging in a very girl-way the six-foot-four, two-hundred-and-ten-pound drive mechanic with mildly grimy fingernails that was me. I was digging in a very boy-way the slim, amber-eyed young lady who had seen it *all*. From the view deck we watched the immense artificial disk of the Star-pit approach, when she turned to me and said, in a voice that didn't sound cruel at all, "This is as far as you go, isn't it?" And I was frightened all over again, because I knew that on about nine different levels she was right.

Ratlit said, "I know what you're thinking." A couple of times when he'd felt like being quiet and I'd felt like talking I may have told

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him more than I should. "Well, cube that for me, dad. That's how trapped I feel!"

I laughed, and Ratlit looked very young again. "Come on," I said. "Let's take a walk."

"Yeah." He stood. The wind tore at our hair like fingers. "I want to go see Alegra."

"I'll walk you as far as Calle-G," I told him. "Then I'm going to go to bed."

"I wonder what Alegra thinks about this business? I always find Alegra a very good person to talk to," he said sagely. "Not to put you down, but her experiences are a little more up to date than yours. You have to admit she has a modern point of view. Plus the fact that she's older." Older than Ratlit, anyway. She was fifteen.

"I don't think being 'trapped' ever really bothers her that way." I said. "Which may be a place to take a lesson from."

By Ratlit's standards Alegra had a few things over me. In my youth kids took to dope in their teens, twenties. Alegra was born with a three-hundred-milligram-a-day habit on a bizarre narcotic that combined the psychedelic qualities of the most powerful hallucinogens with the addictiveness of the strongest depressants. I can sympathize. Alegra's mother was addicted, and the tolerance was passed with the blood plasma through the placental wall. Ordinarily a couple of complete transfusions at birth would have gotten the new-born child straight. But Alegra was also a highly projective telepath. She projected the horrors of birth, the glories of her infantile hallucinated world on befuddled doctors; she was given her drug. Without too much difficulty she managed to be given her drug every day since.

Once I asked Alegra when she'd first heard of golden, and she came back with this horror story. A lot were coming back from Tiber-44 cluster with psychic shock — the mental condition of golden is pretty delicate, and sometimes very minor conflicts nearly ruin them. Anyway, the government that was sponsoring the importation of micro-micro surgical equipment from some tiny planet in that galaxy, to protect its interests, hired Alegra, age eight, as a psychiatric therapist. "I'd concretize their fantasies and make them work 'em through. In just a couple of hours I'd have 'em back to their old, mean, stupid selves again. Some of them were pretty nice when they came to me." But there was a lot of work for her; projective telepaths are rare. So they started witholding her drug to force her to work harder, then rewarding her with increased dosage. "Up till then," she told me, "I might have kicked it. But when I came away, they had me on double what I used to take. They pushed me past the point where withdrawal would be fatal. But I *could* have kicked it, up till then, Vyme." That's right. Age eight.

Oh yeah. The drug was imported by golden from Cancer-9, and most of it goes through the Star-pit. Alegra came here because illegal imports are easier to come by, and you can get it for just about nothing — if you want it. Golden don't use it.

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The wind lessened as Ratlit and I started back. Ratlit began to whistle. In Calle-K the first night lamp had broken so that the level street was like a tunnel of black.

"Ratlit?" I asked. "Where do you think you'll be, oh, in say five years?"

"Quiet," he said. "I'm trying to get to the end of the street without bumping into the walls, tripping on something, or some other catastrophe. If we get through the next five minutes all right, I'll worry about the next five years." He began whistling again.

"Trip, bump the walls?"

"I'm listening for echoes." Again he commenced the little jets of music.

I put my hands in my overall pouch and went on quietly while Ratlif did the bat bit. Then there was a catastrophe. Though I didn't realize it at the time.

Into the circle of light from the remaining lamp at the other end of the street walked a golden.

His hands went up to his face, and he was laughing. The sound skittered in the street. His belt was low on his belly the way the really down and broke g. . .

Ratlit would say that was ungramatical, though. And I just thought of a better way to describe him; the resemblance struck me immediately. He looked like Sandy, my mechanic, who is short, twenty-four years old, muscled like an ape, and wears his worn-out work clothes even when he's off duty. ("I just want this job for a while, boss. I'm not staying out here at the Star-pit. As soon as I shave up a little, I'm gonna make it back in toward galactic center. It's funny out here, like dead." He gazes up through the opening in the hangar roof where there are no clouds and no stars either. "Yeah. I'm just gonna be here for a little while."

"Fine with me, kid-boy."

That was three months back, like I say. He's still with me. He works hard too, which puts him a cut above a lot of characters out here. There's something about Sandy . . .)

On the other hand Sandy's face is also hacked up with acne. His hair is always snap short over his wide head, but in these aspects, the golden was exactly Sandy's opposite, come to think of it. There was still something about him . . .

The golden staggered, went down on his knees still laughing, then collapsed. By the time we reached him, he was silent. With the toe of his boot Ratlit nudged the hand from the belt buckle.

It flopped, palm up, on the pavement. The little fingernail was three quarters of an inch long, the way a lot of the golden wear it. (Like his face, the tips of Sandy's fingers are, all masticated wrecks. Still, something . . .)

"Now isn't that something." Ratlit shook his head. "What do you want to do with him, Vyme?"

"Nothing," I said, "Let him sleep it off."

"Leave him so somebody can come along and steal his belt?" Ratlit grinned. "I'm not that nasty."

"Weren't you just telling me how much you hated golden?"

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"I'd be nasty to whoever stole the belt and wore it. Nobody but a golden should be hated that much."

"Ratlit, let's go."

But he had already kneeled down and was shaking his shoulder. "Let's get him to Alegra's and find out what's the matter with him."

"He's just drunk."

"Nope," Ratlit said. "'Cause he don't smell funny."

"Look. Get back." I hoisted the golden up and laid him across my neck, fireman's carry. "Start moving," I told Ratlit. "I think you're crazy."

Ratlit grinned. "Thanks. Maybe he'll be grateful and lay some lepta on me for taking him in off the street."

"You don't know golden," I said. "But if he does, split it with me."

"Sure."

Two blocks later we reached Alegra's place. The golden was light, so I didn't have much trouble. Halfway up the tilting stairs Teehalt said, "She's in a good mood."

"I guess she is." The weight across my shoulders was becoming pleasant.

I can't describe Alegra's place. I can describe a lot of places like it; and I can describe it before she moved in because I knew a derelict named Drunk-roach who slept on that floor before she did. You know what never-wear plastics look like when they wear out? What non-rust metals look like when they rust through? It was a shabby crack-walled cubicle with dirt in the corners and scars on the window pane when Drunk-roach had his pile of blankets in the corner. But since the hallucinating, projective telepath took it over, who knows what it had become.

Ratlit opened the door on an explosion of classical beauty. "Come in," she sang, accompanied by symphonic arrangement scored on twenty-four staves, with full chorus. "What's that you're carrying, Vyme? Oh, it's a golden!" And before me dizzying tides of yellow swirled and melted. "Put him down, put him down quick and let's see what's wrong!" Hundreds of eyes, spotlights, glittering lenses; I lowered him to the mattress in the corner. "Ohhh..." breathed Alegra.

And the golden lay on orange silk pillows in a teak barge drawn by swans, accompanied by flutes and drums.

"Where did you find him?" she hissed, circling against the ivory moon on her broom. We watched the glowing barge, hundreds of feet below, sliding down the silvered waters between the crags.

"We just picked him up off the street," Ratlit said. "Vyme thought he was drunk. But he don't smell."

"Was he laughing?" Alegra asked. Laughter rolled and broke open on the rocks.

"Yeah," Ratlit said. "Just before he collapsed."

"Then he must be from the Undok expedition that just got back." Mosquitoes darted at us through the wet fronds. The insects reeled among the leaves, upsetting the droplets that fell like glass as, barely visible beyond the palms, the barge drifted on the bright, sweltering river.

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"That's right," I said, back-paddling frantically to avoid a hippopotamus that threatened to upset my kayak. "I'd forgotten they'd just come in."

"Okay," Ratlit said, his breath clouding in front of his lips. "I'm out of it. Let me in. Where did they come back from?" The snow hissed beneath the runners, as we looked after the barge, nearly at the white horizon.

"Un-dok, of course," Alegra said. The barking grew fainter. "Where did you think?"

White eclipsed to black, and the barge was a spot gleaming in the distance of galactic night, flown on by laboring comets.

"Un-dok is the furthest galaxy reached yet," I told Teehalt. "They just got back last week."

"Sick," Alegra added.

I dug my fingers against my abdomen, trying physically to grab the pain.

"They all came back sick —"

Fever heated blood-bubbles in my eyes, and I slipped to the ground, my mouth wide, my tongue like paper on my lips . . .

Ratlit coughed. "All *right*, Alegra. Cut it out! You don't have to be so dramatic!"

"Oh, I'm dreadfully sorry, Ratty, Vyme." Coolth, water. Nausea swept away as solicitous nurses hastily put the pieces back together until everything was beautiful, or so austerely horrible it could be appreciated as beauty. "Anyway," she went on, "they came back with some sort of disease they picked up out there. Apparently it's not contagious, but they're stuck with it for the rest of their lives. Every few days they suddenly have a blackout. It's preceded by a fit of hysterics. It's just one of those stupid things they can't do anything about yet. It doesn't hurt their being golden."

Ratlit began to laugh. Suddenly he asked, "How long are they passed out for?"

"Only a few hours," Alegra said. "It must be terribly annoying." And I began to feel mildly itchy in all sorts of unscratchable places, my shoulder blades, somewhere down my ear, the roof of my mouth. Have you ever tried to scratch the roof of your mouth?

"Well," Ratlit said, "let's sit down and wait it out."

"We can talk," Alegra said, patly. "That way it won't seem like such a long . . ." and hundreds of years later she finished ". . . time."

"Good," Ratlit said. "I wanted to talk to you. That's why I came up here in the first place."

"Oh, fine!" Alegra said. "I love to talk. I want to talk about love. Loving someone" (an incredible yearning twisted my stomach, rose to block my throat) "I mean really loving someone" (the yearning brushed the edge of agony) "means you are willing to admit the person you love is not what you first fell in love with, not the image you first had; and you must be able to like them still for being as close to that image as they are, and avoid disliking them for being so far away."

And through the tenderness that suddenly obliterated all hurt, Ratlit's voice came from the jeweled mosaics

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of overlapping masks that shielded him: "Alegra, I want to talk about loneliness."

"I'm on my way home, kids," I said. "Tell me what happens with Prince Charming when he wakes up." They kept on talking while I went through the difficulties of finding my way out without Alegra's help. When my head cleared, halfway down the stairs, I couldn't tell you if I'd been there five minutes or five years.

V

When I got to the hangar next morning Sandy was filing the eight-foot prongs on the conveyer. "You got a job coming in about twenty minutes," he called down from the scaffold.

"I hope it's not another of those rebuilt jobs."

"Yep."

"Hell," I said. "I don't want to see another one for six weeks."

"All he wants is a general tune-up. Maybe two hours."

"Depends on where it's been," I said. "Where has it been?"

"Just back from —"

"Never mind." I started toward the office cubicle. "I think I'll put the books in order for the last six months. Can't let it go forever."

"Boss," Sandy protested, "that'll take all day!"

"Then I better get started." I leaned back out the door. "Don't disturb me."

Of course as soon as the shadow of the hull fell over the office window I came out in my coveralls, after giving Sandy five miuntes to get it grappled and himself worried. I took the lift up to the one-fifty catwalk. When I stepped out, Sandy threw me a grateful smile from his scar-ugly face. The golden had already started his instructions. When I reached them and coughed, the golden turned to me and continued talking, not bothering to fill me in on what he had said before, figuring Sandy and I would put it together. You could tell this golden had made his pile. He wore an immaculate blue tunic, with bronze codpiece, bracelets and earrings. His hair was the same bronze, his skin was burned red black, and his blue-gray eyes and tight-muscled mouth were proud, proud, proud. While I finished getting instructions, Sandy quietly got started unwelding the eight-foot seal of the organum so we could get to the checkout circuits.

Finally the golden stopped talking — that's the only way you could tell he was finished — and leaned his angular six and a half feet against the railing, clicking his glossy, manicured nails against the pipe a few times. He had that same sword-length pinky nail, all white against his skin. I climbed out on the rigging to help Sandy.

We had been at work ten minutes when a kid, maybe eighteen or nineteen, barefoot and brown, black hair hacked off at shoulder length, a rag that didn't fit tucked around under his belt, and dirty, came wandering down the catwalk. His thumbs were hooked under the yellow belt-links: golden.

First I thought he'd come from

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the ship. Then I realized he'd just stalked into the hangar from outside and come up on the lift.

"Hey, brother!" The kid who was golden hooked his thumbs in his belt, as Sandy and I watched the dialogue from the rigging on the side of the hull. "I'm getting tired of hanging around this Star-pit. Just about broke as well. Where you running to?"

The man who was golden clicked his nails again. "Go away, distant cousin."

"Come on, brother, give me a berth on your lifeboat out of this dungheap to someplace worthwhile."

"Go away, or I'll kill you."

"Now, brother, I'm just a youngster adrift in this forsaken quarter of the sky. Come on, now —"

Suddenly the blond man whirled from the railing, grabbed up a four-foot length of pipe leaning beside him, and swung it so hard it hissed. The black-haired ragamuffin leapt back and from under his rag snatched something black that, with a flick of that long nail, suddenly had seven inches of blade in front of it. The bar swung again, caught the shoulder of the boy, then clattered against the hull. He shrieked and came straight forward. The two bodies locked, turned, fell. A gurgle, and the man's hands slipped from the neck of the ragamuffin. The boy scrambled back to his feet. Blood bubbled and popped on the hot blade.

A last spasm caught the man, and he flipped over, smearing the enameled catwalk, rolled once more, this time under the rail, and dropped two hundred and fifty feet to the cement flooring.

Flick. Off went the power in the knife. The golden wiped powdered blood on his thigh, spat over the rail and said softly, "No relative of mine." Flick. The blade itself disappeared. He started down the catwalk.

"Hey!" Sandy called, when he choked his voice back into his throat, "what about . . . I mean you . . . well, your ship!" There are no inheritance laws among golden — only rights of plunder.

The golden glanced back. "I give it to you," he sneered. His shoulder must have been killing him, but he stepped into the lift like he was walking into a telephone booth. That's a golden for you.

Sandy was horrified and bewildered. Behind his pitted ugliness there was that particularly wretched amazement only the totally vulnerable get when hurt.

"That's the first time you've ever seen an incident like that?" I felt sorry for him.

"Well, I wandered into Gerg's Bar a couple of hours after they had that massacre. But the ones who started it were drunk."

"Drunk or sober," I said. "Believe me, it doesn't mean that much difference to the way a man acts. I know." I shook my head. "I keep forgetting you've only been here three months."

Sandy, upset, looked down at the twisted blot on the flooring. "What about him? And the ship, boss?"

"I'll call the wagon to come scrape

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him up. And so the ship is yours."

"Huh?"

"He gave it to you. It'll stand up in court. It just takes one witness. Me."

"What am I gonna do with it? I mean I would have to haul it to a junk station to get the salvage. Look, Boss, I'm gonna give it to you. Sell it or something. I'd feel sort of funny with it anyway."

"I don't want it. Besides, then I'd be involved in the transaction and couldn't be a witness."

"I'll be a witness." Ratlit stepped from the lift. "I caught the whole bit when I came in the door. Great acoustics in this place." He whistled again. The echo came back. Ratlit closed his eyes a moment. "Ceiling is . . . a hundred and twenty feet overhead, more or less. How's that, huh?"

"Hundred and twenty-seven," I said.

Ratlit shrugged. "I need more practice. Come on, Sandy, you give it to him, and I'll be a witness."

"You're a minor," Sandy said. Sandy didn't like Ratlit. I used to think it was because Ratlit was violent and flamboyant where Sandy was stolid and ugly. Even though Sandy kept protesting the temporariness of his job to me, I remember, when I first got to the Star-pit, those long-dying thoughts I'd had about leaving. It was a little too easy to see Sandy a mechanic here thirty years from now. I wasn't the only one it had happened to. Ratlit had been a grease monkey three weeks. You tell me where he was going to be in three weeks. "Aren't you suppose to be greasing at Poloscki's?" Sandy said, turning back to the organum.

"Coffee break," Ratlit said. "If you're going to give it away, Sandy, can I have it?"

"So you can claim salvage? Hell, no."

"I don't want it for salvage. I want it for a present." Sandy looked up again. "Yeah. To give to someone else. Finish the tuneup and give it to me, okay?"

"You're nuts, kid-boy," Sandy said. "Even if I gave you the ship, what you gonna pay for the work with?"

"Aw, it'll only take a couple of hours. You're half done anyway. I figured you'd throw in the tuneup along with it. If you really want the money, I'll get it to you a little at a time. Vyme, what sort of professional discount will you give me? I'm just a grease monkey, but I'm still in the business."

I whacked the back of his red head, between a-little-too-playfully and not-too-hard. "Come on, kid-boy," I said. "Help me take care of puddles downstairs. Sandy, finish it up, huh?"

Sandy grunted and plunged both hands back into the organum.

As soon as the lift door closed, Ratlit demanded, "You gonna give it to me, Vyme?"

"It's Sandy's ship," I said.

"You tell him, and he will."

I laughed. "You tell me how the golden turned out when he came to. I assume that's who you want the ship for. What sort of fellow was he?"

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Ratlit hooked his fingers in the mesh wall of the lift cage and leaned back. "They're only two types of golden." He began to swing from side to side. "Mean ones and stupid ones." He was repeating a standard line you heard around the Star-pit.

"I hope yours is stupid," I said, thinking of the two who'd just ruined Sandy's day and upset mine.

"Which is worse?" Ratlit shrugged. That is the rest of the line. When a golden isn't being outright mean, he exhibits the sort of non-thinkingness that gets other people hurt — you remember the one that nearly rammed my ship, or the ones who didn't bother to bring back the Kyber antitoxin? It can be worse than meanness. "But this one —" Ratlit stood up "— is unbelievably stupid."

"Yesterday you hated them. Today you want to give one a ship."

"He doesn't have one," Ratlit explained calmly, as though that warranted all change of attitude. "And because he's sick, it'll be hard for him to find work unless he has one of his own."

"I see." We bounced on the silicon cushion. I pushed open the door and started for the office. "What all went on after I left? I must have missed the best part of the evening."

"You did. Will I really need that much more sleep when I pass thirty-five?"

"Cut the cracks and tell me what happened."

"Well —" Ratlit leaned against the office door jamb while I dialed necrotics. "Alegra and I talked a little after you left, till finally we realized the golden was awake and listening. Then he told us we were beautiful."

I raised an eyebrow. "Mmmm?"

"That's what we said. And he said it again, that watching us talk and think and build was one of the most beautiful things he'd ever seen. 'What have you seen?' we asked him. And he began to tell us." Ratlit stopped breathing, something built up, then, at once it came out, "Oh, Vyme, the places he's been! The things he done, the landscapes he's starved in, the hells where he's had to lie down and go to sleep he was that tired, or the heavens he's soared through screaming! Oh, the things he told us about! And Alegra made them almost real so we could all be there again, just like she used to do when she was a psychiatrist! The stories, the places, the things . . ."

"Sounds like it was really something."

"It was nothing!" he came back vehemently. "It was all in the tears that wash your eyes, in the humming in your ears, in the taste of your own saliva. It was just a hallucination, Vyme! It wasn't real." Here his voice started cracking between the two octaves that were after it. "But that thing I told you about . . . huge . . . alive and dead at the same time, like a star . . . way in another galaxy. Well, he's seen it. And last night, but it wasn't real of course, but . . . I almost heard it . . . singing!" His eyes were huge and green and bright. I felt envious of anyone who could pull this reaction from kids like Alegra and Ratlit.

"So, we decided —" his voice

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fixed itself on the proper side of middle C — "after he went back to sleep, and we lay awake talking a while longer, that we'd try and help him get back out there. Because it's . . . wonderful!"

"That's fascinating." When I finished my call, I stood up from the desk. I'd been sitting on the corner. "After work I'll buy you dinner and you can tell me all about the things he showed you."

"He's still there, at Alegra's," Ratlit said — helplessly, I realized after a moment. "I'm going back right after work."

"Oh," I said. I didn't seem to be invited.

"It's just a shame," Ratlit said when we came out of the office, "that he's *so* stupid." He glanced at the mess that had been golden staining the concrete and shook his head.

VI

I'd gone back to the books when Sandy stepped in. "All finished. What say we knock off for a beer or something, huh, boss?"

"All right." I said, surprised. Sandy was usually as social as he was handsome. "Want to talk about something?"

"Yeah." He looked relieved.

"That business this morning got to your head, huh?"

"Yeah," he repeated.

"There is a reason," I said as I made ready to go. "It's got something to do with the psychological part of being a golden. Meanness and stupidity, like everyone says.

But however it makes them act here, it protects them from complete insanity at the twenty thousand light-year limit."

"Yeah. I know, I know." Sandy had started stepping uncomfortably from one boot to the other. "But that's not what I wanted to talk about."

"It isn't?"

"Um-um."

"Well?" I asked after a moment.

"It's that kid, the one you're gonna give the ship to."

"Ratlit?"

"Yeah."

"I haven't made up my mind about giving him the ship," I lied. "Besides, legally it's yours."

"You'll give it to him," Sandy said. "And I don't care, I mean not about the ship. But, boss, I gotta

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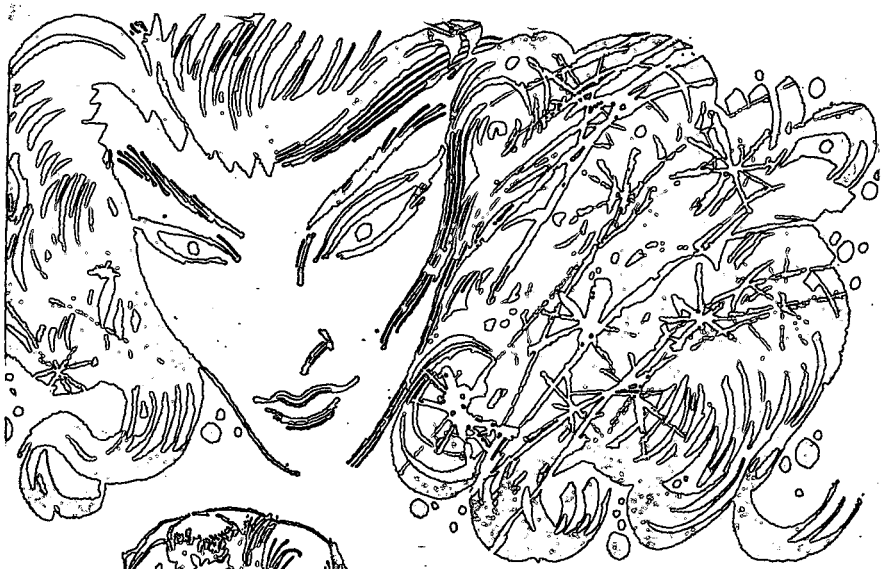

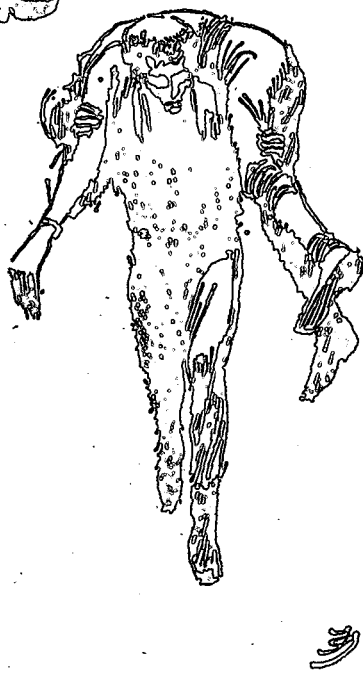

talk to you about that kid-boy."

Something about Sandy . . .

I'd never realized he'd thought of Ratlit as more than a general nuisance. Also, he seemed sincerely worried about me. I was curious. It took him all the way to the bar and through two beers — while I drank hot milk with honey — before he tongued and chewed what he wanted to say into shape.

"Boss, understand, I'm nearer Ratlit than you. Not only my age. My life's been more like his than yours has. You look at him like a son. To me, he's a younger brother: I taught him all the tricks. I don't understand him completely, but I see him clearer than you do. He's had a hard time, but not as hard as you think. He's gonna take you — and I don't mean money — for everything he can."

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Where the hell that came from I didn't know and didn't like. "He won't take anything I don't want to give."

"Boss?" Sandy suddenly asked. "You got kids of your own?"

"Nine," I said. "Did have. I don't see the ones who're left now, for which their parents have always been just as happy — except one. And she was sensible enough to go along with the rest, while she was alive."

"Oh." Sandy got quiet again. Suddenly he went scrambling in his overall pouch and pulled out a three-inch porta-pix. Those great, greasy hands that I was teaching to pick up an egg shell through a five-hundred-to-one-ratio waldo were clumsily fumbling at the push-pull levers. "I got kids," he said. "See. Seven of them."

And on the porta-pix screen was a milling, giggling group of little apes that couldn't have been anybody else's. All the younger ones lacked was acne. They even shuffled back and forth from one foot to the other. They began to wave, and the speaker in the back chirped: "Hi, da! Hello, da! Da, mommy says to say we love you! Da, da, come home soon!"

"I'm not with them now," he said throatily. "But I'm going back soon as I get enough money so I can take them all out of that hell-hole they're in now and get the whole family with a decent sized proke-group. There're only twenty-three adults there now, and things were beginning to rub. That's why I left in the first place. It was getting so nobody could talk to anyone else. That's pretty rough on all our kids, thirty-two when I left. But soon I'll be able to fix that."

"On the salary I'm paying you?" This was the first I'd heard of any of this; that was my first reaction. My second, which I didn't voice, was, Then why the hell don't you take that ship and sell it somehow! Over forty and self-employed the most romantic become monetarily practical.

Sandy's fist came down hard on the bar. "That's what I'm trying to say to you, boss! About you, about Ratlit. You've all got it in your heads that this, out here, is it! Finito! The end! Sure, you gotta accept limitations, but the right ones. Sure, you have to admit there are certain directions in which you can not go. But once you do that, you find there are others where you can go as far as you want. Look, I'm not gonna hang around the Star-pit all my life. And if I make my way back toward galactic center, make enough money so I can go home, raise my family the way I want, that's going forward, forward even from here. Not back."

"All right," I said. Quiet Sandy surprised me. I still wondered why he wasn't breaking his tail to get salvage on that ship that had just fallen into his hands, if getting back home with money in his pocket was that important. "I'm glad you told me about yourself. Now how does it all tie up with Ratlit?"

"Yeah. Ratlit." He put the porta-pix back in his overall pouch. "Boss, Ratlit is the kid your own could be. You want to give him the advice, friendship and concern he's never had, that you couldn't give yours.

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But Ratlit is also the kid I was about ten years ago, started no place, with no destination, and no values to help figure out the way, mixed up in all the wrong things, mainly because he's not sure where the right ones are."

"I don't think you're that much like Ratlit," I told him. "I think you may wish you were. You've done a lot of the things Ratlit's done? Ever write a novel?"

"I tried to write a trilogy," Sandy said. "It was lousy. But it pushed some things off my chest, so I got something out of it, even if nobody else did, which is what's important. Because now I'm a better mechanic for it, Boss. Until I admit to myself what I can't do, it's pretty hard to work on what I can. Same goes for Ratlit. You too. That's growing up. And one thing you can't do is help Ratlit by giving him a ship he can't fly."

Growing up brought back the picture. "Sandy, did you ever build an ecologarium when you were a kid?"

"No." The word had the puzzled inflection that means, don't-even-know-what-one-is.

"I didn't either," I told him. Then I grinned and punched him in the shoulder. "Maybe you're a little like me, too? Let's get back to work."

"Another thing," Sandy said, not looking very happy as he got off the stool. "Boss, that kid's gonna hurt you. I don't know how, but it's gonna seem like he hunted for how to make it hurt most, too. That's what I wanted to tell you, boss."

I was going to urge him to take the ship, but he handed me the keys back in the hangar before I could say anything and walked away. When people who should be clearing up their own problems start giving you advice . . . well, there was something about Sandy I didn't like.

If I can't take long walks at night with company, I take them by myself. I was strolling by the Edge, the world-wind was low, and the stellar-plex, that huge heat-gathering mirror that hung nine thousand miles off the pit, was out. It looks vaguely like the moon used to look from Earth, only twice as big, perfectly silver, and during the three and a half days it faces us it's always full.

Then, up ahead where the fence was broken, I saw Ratlit kicking gravel over the Edge. He was leaning against a lamppost, his shirt ballooning and collapsing at his back.

"Hey, kid-boy! Isn't the golden still at Alegra's?"

Ratlit saw me and shrugged.

"What's the matter?" I asked when I reached him. "Ate dinner yet?"

He shrugged again. His body had the sort of ravenous metabolism that shows twenty-four hours without food. "Come on. I promised you a meal. Why so glum?"

"Make it something to drink."

"I know about your phony I.D." I told him. "But we're going to eat. You can have milk, just like me."

No protests, no dissertation on the injustice of liquor laws. He started walking with me.

"Come on, kid-boy, talk to gramps. Don't you want your ship any more?"

Suddenly he clutched my forearm

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with white, bony fingers. My forearm is pretty thick, and he couldn't get his hands around it. "Vyme, you've got to make Sandy give it to me now! You've got to!"

"Kid-boy, talk to me."

"Alegra." He let go. "And the golden. Hate golden, Vyme. Always hate them. Because if you start to like one, and then start hating again, it's worse."

"What's going on? What are they doing?"

"He's talking. She's hallucinating. And neither one pays any attention to me."

"I see."

"You don't see. You don't understand about Alegra and me."

I was the only one who'd met the both of them who didn't.

"I know you're very fond of each other." More could be said.

Ratlit said more. "We don't even like each other that much, Vyme. But we need each other. Since she's been here, I get her junk for her. She's too sick to go out much now. And when I have bad changes, or sometimes bright recognitions, it doesn't matter. I bring them to her, and she builds pictures of them for me, and we explore them together and . . . learn about things. When she was a psychiatrist for the government, she learned an awful lot about how people tick. And she's got an awful lot to teach me, things I've got to know." Fifteen-year-old ex-psychiatrist drug addict? Same sort of precocity that produces thirteen-year-old novelists. Get used to it. "I need her now almost as much as she needs her . . . medicine."

"Have you told the golden you've got him a ship?"

"You didn't say I could have it yet."

"Well, I say so right now. Why don't we go back there and tell him he can be on his way? If we put it a little more politely, don't you think that'll do the trick?"

He didn't say anything. His face just got back a lot of its life.

"We'll go right after we eat. What the hell, I'll buy you a drink. I may even have one with you."

Alegra's was blinding when we arrived. "Ratlit, oh, you're back! Hello, Vyme! I'm so glad you're both here! Everything is beautiful tonight!"

"The golden," Ratlit said. "Where's the golden?"

"He's not here." A momentary throb of sadness dispelled with torturous joy. "But he's coming back!"

"Oh," Ratlit said. His voice echoed through the long corridors of golden absence winding the room." 'Cause I got a ship for him. All his. Just had a tuneup. He can leave any time he wants to."

"Here're the keys," I said, taking them from my pouch for dramatic effect. "Happen to have them right here."

As I handed them to Ratlit there were fireworks, applause, a fanfare of brasses. "Oh, that's wonderful. Wonderful! Because guess what, Ratlit? Guess what, Vyme?"

"I don't know," Ratlit said. "What?"

"I'm a golden too!" Alegra cried from the shoulders of the cheering

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crowd pushing their way through still more admiring thousands.

"Huh?"

"I, me, myself am actually an honest to goodness golden. I just found out today."

"You can't be," Ratlit said. "You're too old for it just to show up now."

"Something about my medicine," Alegra explained. "It's dreadfully complicated." The walls were papered with anatomical charts, music by Stockhausen. "Something in my medicine kept it from coming out until now, until a golden could come to me, drawing it up and out of the depths of me, till it burst out, beautiful and wonderful and . . . golden! Right now he's gone off to Carlson Labs with a urine sample for a final hormone check. They'll tell him in an hour, and he'll bring back my golden belt. But he's sure already. And when he comes back with it, I'm going to go with him to the galaxies, as his apprentice. We're going to find a cure for his sickness and something that will make it so I won't need my medicine any more. He says if you have all the universe to roam around in, you can find anything you look for. But you need it *all* — not just a cramped little cluster of a few billion stars off in a corner by itself. Oh, I'm free, Ratlit, like you always wanted to be! While you were gone, he . . . well, did something to me that was *golden,* and it triggered my hormonal imbalance!" The image came in through all five senses. Breaking the melodius ecstasy came the clatter of keys as Ratlit hurled them at the wall.

I left feeling pretty odd. Ratlit had started to go too, but Alegra called him back. "Oh, now don't go on like that, Ratty! Act your age. Won't you stay and do me one little last favor?"

So he stayed. When I untangled myself from the place and was walking home, I kept on remembering what Alegra had said about love.

VII

Work next day went surprisingly smoothly. Poloscki called me up about ten and asked if I knew where Ratlit was because he hadn't been at work that day. "You're sure the kid isn't sick?"

I said I'd seen him last night and that he was probably all right. Poloscki made a sort of disgusted sound and hung up.

Sandy left a few minutes early, as he'd been doing all week, to run over to the post office before it closed. He was expecting a letter from his group, he said. I felt strange about having given the ship away out from under him. It was sort of an immature thing to do. But he hadn't said anything about wanting it, and Ratlit was still doing Alegra favors, so maybe it would all work out for the best.

I thought about visiting Alegra that evening. But there was the last six-months' paper work, still not finished. I went into the office, plugged in the computer and got ready to work late.

I was still at it sometime after eleven when the entrance light blinked, which meant somebody had

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opened the hangar door. I'd locked it. Sandy had the keys so he could come in early. So it was Sandy. I was ready for a break and all set to jaw with him a while. He was always coming back to do a little work at odd hours. I waited for him to come into the office. But he didn't.

Then the needle on the power gauge, which had been hovering near zero with only the drain of the little office computer, swung up to seven. One of the big pieces of equipment had been cut in.

There was some cleanup work to do, but nothing for a piece that size. Frowning, I switched off the computer and stepped out of the office. The first great opening in the hanger roof was mostly blocked with the bulk of Ratlit's/Sandy's/my ship. Stellarplex light curved smoothly over one side, then snarled in the fine webbing of lifts, catwalks, haulines and grappler rigging. The other two were empty, and hundred-meter circles of silver dropped through assembly riggings to the concrete floor. Then I saw Sandy.

He stood just inside the light from the last opening, staring up at the Stellarplex, its glare lost in his ruined face. As he raised his left hand — when it started to move I thought it looked too big — light caught on the silver joints of the master-gauntlet he was wearing. I knew where the power was going.

As his hand went above his head, a shadow fell over him as a fifteen-foot slave talon swung from the darkness, its movement aping the master-glove. He dropped his hand in front of his face, fingers curved. Metal claws lowered about him, beginning to quiver. Something about the way . . . he was trying to kill himself!

I started running toward those hesitant, gaping claws, leaped into the grip, and reached over his shoulder to slap my forearm into the control glove, just as he squeezed. Like I said, my forearm is big, but when those claws came together, it was a tight fit. Sandy was crying.

"You stupid," I shouted, "inconsiderate, bird-brained, infantile —" as I pried his fingers loose from my arm, the talons jerked open one at a time from around us — "asinine, idiotic —" at last I got the glove off — "puerile . . ." Then I said, "What the hell is the matter with you?"

Sandy was sitting on the floor now, his head hung between his shoulders. He stank.

"Look," I said, maneuvering the slave talon back into place with the gross-motion controls on the gauntlet's wrist, "if you want to go jump off the Edge, that's fine with me. Half the gate's down anyway. But don't come here and mess up my tools. You can squeeze your own head up a little, but you're not going to bust up my glove here. You're fired. Now tell me what's wrong."

"I knew it wasn't going to work. Wasn't even worth trying. I knew . . ." His voice was getting all mixed up with the sobs. "But I thought maybe . . ." Besides his left hand was the porta-pix, its screen cracked. And a crumpled piece of paper.

I turned off the glove, and the

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talons stopped humming twenty feet overhead. I picked up the paper and smoothed it out. I didn't mean to read it all the way through.

Dear Sanford,

Things have been difficult since you left but not too hard and I guess a lot of pressure is off everybody since you went away and the kids are getting used to your not being here though Bobbi-D cried a lot at first. She doesn't now. We got your letter and were glad to hear things had begun to settle down for you though Hank said you should have written before this and was very mad though Mary tried to calm him down but he just said, "When he married you all he married me too, damn it, and I've got just as much right to be angry at him as you have," which is true, Sanford, but I tell you what he said because it's a quote and I think you should know exactly what's being said, especially since it expresses something we all feel on one level or another. You said you might be able to send us a little money, if we wanted you home, which I think would be very good, the money I mean, though Laura said if I put that in the letter she would divorce us, but she won't, and like Hank I've got a right to say what I feel which is, Yes I think you should send money, especially after that unpleasant business just before you left. But we are all agreed we do not want you to come back. And would rather not have the money if that's what it meant.

That is hard but true. As you can gather your letter caused quite an upset here. I would like — which makes me different from the others but is why they wanted me to write this letter — to hear from you again and keep track of what you are doing because I used to love you very much and I never could hate you. But like Bobbi-D, I have stopped crying.

Sincerely —

The letter was signed "Joseph." In the lower corner were the names of the rest of the men and women of the group.

"Sandy?"

"I knew they wouldn't take me back. I didn't even really try, did I? But —"

"Sandy, get up."

"But the *children*," he whispered. "What's gonna happen to the children?"

And there was a sound from the other end of the hangar. Three stories up the side of the ship in the open hatchway, silvered by Stellarplex light, stood the golden, the one Ratlit and I had found on the street. You remember what he looked like. He and Alegra must have sneaked in while Sandy and I were struggling with the waldo. Probably they wanted to get away as soon as possible before Ratlit made real trouble, or before I

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changed my mind and got the keys back. All this ship-giving had been done without witnesses. The sound was the lift rising toward the hatchway. "The children?" Sandy whispered again.

The door opened, and a figure stepped out in the white light. Only it was Ratlit! It was Ratlit's red hair, his gold earring, his bouncy run as he started for the hatch. And there were links of yellow metal around his waist.

Baffled, I heard the golden call: "Everything checks out inside, brother. She'll fly us anywhere."

And Ratlit cried, "I got the grapples all released, brother. Let's go!" Their voices echoed down through the hangar. Sandy raised his head, squinting.

As Ratlit leapt into the hatch, the golden caught his arm around the boy's shoulder. They stood a moment, gazing at one another, then Ratlit turned to look down into the hangar, back on the world he was about to leave. I couldn't tell if he knew we were there or not. Even as the hatch swung closed, the ship began to whistle.

I hauled Sandy back into the shock chamber. I hadn't even locked the door when the thunder came and my ears nearly spit. I think the noise surprised Sandy out of himself. It broke something up in my head, but the pieces were falling wrong.

"Sandy," I said, "we've got to get going!"

"Huh?" He was fighting the drunkenness and probably his stomach too.

"I don't wanna go nowhere."

"You're going anyway. I'm sure as hell not going to leave you alone."

VIII

When we were halfway up the stairs I figured she wasn't there. I felt just the same. Maybe she was with them in the ship.

"My medicine. Please, can't you get my medicine? I've got to have my medicine, please, please . . . please." I could just hear the small, high voice when I reached the door. I punched it open.

Alegra lay on the mattress, pink eyes wide, white hair frizzled around her balding skull. She was incredibly scrawny, her uncut nails black as Sandy's nubs without the excuse of hours in a graphite-lubricated gauntlet. The translucency of her pigmentless skin under how-many-days of dirt made my flesh crawl. Her face drew in around her lips like the flesh about a scar. "My medicine. Vyme, is that you? You'll get my medicine for me, Vyme? Won't you get my medicine?" Her mouth wasn't moving, but the voice came on. She was too weak to project on any but the aural level. It was the first time I'd seen Alegra without her cloak of hallucination, and it brought me up short.

"Alegra," I said when I got hold of myself. "Ratlit and the golden went off on the ship."

"Ratlit. Oh, nasty Ratty, awful little boy! He wouldn't get my medicine. But you'll get it for me, won't you, Vyme? I'm going to die in about ten minutes, Vyme. I don't want to

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die. Not like this. The world is so ugly and painful now. I don't want to die here."

"Don't you have any?" I stared around the room I hadn't seen since Drunk-roach lived there. It was a lot worse. Dried garbage, piled first in one corner, now covered half the floor. The rest was littered with papers, broken glass, a spilled can of something unrecognizable for the mold, an da dead beetle.

"No. None here. Ratlit gets it from a man who hangs out in Gerg's over on Calle-X. Oh, Ratlit used to get it for me every day, such a nice little boy, every day he would bring me my lovely medicine. I never had to leave my room at all. You go get it for me, Vyme."

"It's the middle of the night, Alegra! Gerg's is closed, and Calle-X is all the way across the pit anyway. Couldn't even get there in ten minutes, much less find this character and come back!"

"If I were well, Vyme, I'd fly you there in a cloud of light pulled by peacocks and porpoises, and you'd come back to hautboys and tambourines, bringing my beautiful medicine to me, in less than an eye's blink. But I'm sick now. Sick. And I'm going to die."

There was a twitch in the crinkled lid of one pink eye.

"Alegra, what happened!"

"Ratlit's insane!" she projected with shocking viciousness. I heard Sandy behind me catch his breath. "Insane at twenty thousand light-years, dead at twenty-five."

"But his golden belt . . ."

"It was mine! It was my belt and he stole it. And he wouldn't get my medicine. Ratlit's not a golden. I'm a golden, Vyme! I can go anywhere, anywhere at all! I'm a golden golden golden . . . But I'm sick now. I'm so sick."

"But didn't the golden know the belt was yours?"

"Him? Oh, he's so incredibly stupid! He would believe anything. The golden went to check some papers and get provisions and was gone all day, to get my belt. But you were here that night. I asked Ratlit to go get my medicine and take another sample to Carlson's for me. But neither of them came back till I was very sick, very weak. Ratlit found the golden, you see, told him that I'd changed my mind about going, and that he, Ratlit, was a golden as well, that he'd just been to Carlson's. So the golden gave him my belt and off they went."

"But how in the world would he believe a kid with a story like that?"

"You know how stupid a golden can be, Vyme. As stupid as they can be mean. Besides, it doesn't matter to him if Ratlit dies. He doesn't care if Ratlit was telling the truth or not. The golden will live. When Ratlit starts drooling, throwing up blood, goes deaf first and blind last and dies, the golden won't even be sad. He's too stupid to feel sad. That's the way golden are. But I'm sad, Vyme, because no one will bring me my medicine."

My frustration had to lash at something; she was there. "You mean you didn't know what you were doing to Ratlit by leaving, Alegra? You

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mean you didn't know how much he wanted to get out, and how much he needed you at the same time? You couldn't see what it would do to him if you deprived him of the thing he needed and rubbed his nose in the thing he hated both at once? You couldn't guess that he'd pull some crazy stunt? Oh, kid-girl, you talk about golden. You're the stupid one."

"Not stupid," she projected quietly. "*Mean,* Vyme. I knew he'd try to do something. I just didn't think he'd succeed. Ratlit is really such a child."

The frustration, spent, became rolling sadness. "Couldn't you have waited just a little longer, Alegra? Couldn't you have worked out the leaving some other way, not hurt him so much?"

"I wanted to get out, Vyme, to keep going and not be trapped. Like Ratlit wanted, like you want, like Sandy wants, like golden." For a moment I had forgotten Sandy and the golden. "Only I was cruel. I had the chance to do it and I took it. Why is that bad. Vyme? Unless, of course, that's what being free means."

A twitch in the eyelid again. It closed. The other stayed open.

"Alegra —"

"I'm a golden, Vyme. A golden. And that's how golden are. But don't be mad at me, Vyme. Don't. Ratlit was mean too, not to give me my medi —"

The other eye closed. I closed mine too and tried to cry, but my tongue was pushing too hard on the roof of my mouth.

Sandy came to work the next day, and I didn't mention his being fired. The teletapes got hold of it, and the leadlines tried to make the thing as sordid as possible:

X-CON TEENAGER (they didn't mention his novel) SLAYS JUNKY SWEETHEART! DIES HORRIBLY!

They didn't mention the golden either. They never do.

Reporters pried around the hangar a while, trying to get us to say the ship was stolen. Sandy came through pretty well. "It was his ship," he grunted, putting lubricant in the gauntlets. "I gave it to him."

"What are you gonna give a kid like that a ship for? Maybe you loaned it to him. 'Dies horrible death in borrowed ship.' That sounds okay."

"Gave it to him. Ask the boss." He turned back toward the scaffolding. "He witnessed."

"Look, even if you liked the kid, you're not saving him anything by covering up."

"I didn't like him," Sandy said. "But I gave him the ship."

"Thanks," I told Sandy when they left, not sure what I was thanking him for, but still feeling very grateful. "I'll do you a favor back."

A week later Sandy came in and said, "Boss, I want my favor."

I narrowed my eyes against his belligerent tone. "So you're gonna quit at last. Can you finish out the week?"

He looked embarrassed, and his hands started moving around in his overall pouch. "Well, yeah. I am gonna leave. But not right away,

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boss. It is getting a little hard for me to take, out here."

"You'll get used to it," I said. "You know there's something about you that's, well, a lot like me. I learned. You will too."

Sandy shook his head. "I don't think I want to." His hand came out of his pocket. "See, I got a ticket." In his dirty fingers was a metal-banded card. "In four weeks I'm going back in from the Star-pit. Only I didn't want to tell you just now, because, well, I did want this favor, boss."

I was really surprised. "You're not going back to your group," I said. "What are you going to do?"

He shrugged. "Get a job. I don't know. There're other groups. Maybe I've grown up a little bit." His fists went way down into his pouch, and he started to shift his weight back and forth on his feet. "About that favor, boss."

"What is it?"

"I got to talking to this kid outside. He's really had it rough, Vyme." That was the first and last time Sandy ever called me by name, though I'd asked him to enough times before. "And he could use a job."

A laugh got all set to come out of me. But it didn't, because the look on his ugly face, behind the belligerence, was so vulnerable and intense. Vulnerable? But Sandy had his ticket; Sandy was going on.

"Send him to Poloscki's," I said. "Probably needs an extra grease-monkey. Now let me get back to work, huh?"

"Could you take him over there?" Sandy said very quickly. "That's the favor, boss."

"Sandy, I'm awfully busy." I looked at him again. "Oh, all right."

"Hey, boss," Sandy said as I slid from behind the desk, "remember that thing you asked me if I ever had when I was a kid?"

It took a moment to come back to me. "You mean an ecologarium?"

"Yeah. That's the word." He grinned. "The kid-boy's got one. He's right outside, waiting for you."

"He's got it with him?"

Sandy nodded.

I walked toward the hangar door picturing some kid lugging around a six-by-six plastic cage.

Outside the boy was sitting on a fuel hydrant. I'd put a few trees there, and the "day"-light from the illumination tubes arcing the street dappled the gravel around him.

IX

He was about fourteen, with copper skin and curly black hair. I saw why Sandy wanted me to go with him about the job. Around his waist, as he sat hunched over on the hydrant with his toes spread on metal base-flange, was a wide-linked belt that was golden.

He was looking through an odd jewel-and-brass thing that hung from a chain around his neck.

"Hey."

He looked up. There were spots of light on his blue-black hair.

"You need a job?"

He blinked.

"My name's Vyme. What's yours?"

"You call me An." The voice

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was even, detached, with an inflection that is golden.

I frowned. "Nickname?"

He nodded.

"And really?"

"Androcles."

"Oh." My oldest kid is dead. I know it because I have all sorts of official papers saying so. But sometimes it's hard to remember. And it doesn't matter whether the hair is black, white, or red. "Well, let's see if we can put you to work somewhere. Come on." An stood up, eyes fixed on me, suspicion hiding behind high glitter. "What's the thing around your neck?"

His eyes struck it and bounced back to my face in an instant. "Cousin?" he asked.

"Huh?" Then I remember the golden slang. "Oh, sure. First cousins. Brothers if you want."

"Brother," An said. Then a smile came tumbling out on his face, silent and volcanic. He began loping along beside me as we started off toward Poloscki's. "This — " he held up the thing on the chain "— is an ecologarium. Want to see?" His diction was clipped, precise and detached. But when an expression caught on his face, it was unsettlingly intense.

"Oh, a little one. With microorganisms?"

An nodded.

"Sure. Let's have a look."

The hair on the back of his neck pawed the chain as he bent to remove it.

I held it up to see.

Some blue liquid, a fairly large air bubble and a glob of black-speckled jelly in a transparent globe, the size of an eyeball; it was set in two metal rings, one within the other, pivoted so the globe turned in all directions. Mounted on the outside ring was a curved tongue of metal at the tip of which was a small tube with a pin-sized lens. The tube was threaded into a bushing, and I guess you used it to look at what was going on in the sphere.

"Self-contained," explained An. "The only thing needed to keep the whole thing going is light. Just about any frequency will do, except way up on the blue end. And the shell cuts that out."

I looked through the brass eyepiece.

I'd swear there were over a hundred life forms with five to fifty stages each: spores, zygotes, seeds, eggs, growing and developing through larvae, pupae, buds, reproducing through sex, syzygy, fission. And the whole ecological cycle took about two minutes.

Spongy masses like red lotuses clung to the air bubble. Every few seconds one would expel a cloud of black things like wrinkled bits of carbon paper into the gas where they were attacked by tiny motes I could hardly see even with the lens. Black became silver. It fell back to the liquid like globules of mercury, and coursed toward the jelly that was emitting a froth of bubbles. Something in the froth made the silver beads reverse direction. They reddened, sent out threads and alveoli, until they reached the main bubble again as lotuses.

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The reason the lotuses didn't crowd each other out was because every eight or nine seconds a swarm of green paramecia devoured most of them. I couldn't tell where they came from; I never saw one of them split or get eaten, but they must have had something to do with the thorn-balls — if only because there were either thorn-balls or paramecia floating in the liquid, but never both at once.

A black spore in the jelly wiggled, then burst the surface as a white worm. Exhausted, it laid a couple of eggs, rested until it developed fins and a tail, then swam to the bubble where lay more eggs among the lotuses. Its fins grew larger, its tail shriveled, splotches of orange and blue would appear, till it took off like a weird butterfly to sail around the inside of the bubble. The motes that silvered the black offspring of the lotus must have eaten the particolored fan because it just grew thinner and frailer till it disappeared. The eggs by the lotus would hatch into bloated fish forms that swam back through the froth to vomit a glob of jelly on the mass at the bottom, then collapse. The first eggs didn't do much except turn into black spores when they were covered with enough jelly.

All this was going on amidst a kaleidoscope of frail, wilting flowers and blooming jeweled webs, vines and worms, warts and jelly fish, symbiotes and saprophytes, while rainbow herds of algae careened back and forth like glittering confetti. One rough-rinded galoot, so big you could see him without the eye-piece, squatted on the wall, feeding on jelly, batting his eye-spots while the tide surged through tears of gills.

I blinked as I took it from my eye.

"That looks complicated." I handed it back to him.

"Not really." He slipped it around his neck. "Took me two weeks with a notebook to get the whole thing figured out. You saw the big fellow?"

"The one who winked?"

"Yes. Its reproductive cycle is about two hours, which trips you up at first. Everything else goes so fast. But once you see him mate with the thing that looks like a spider web with sequins — same creature, different sex — and watch the offspring aggregate into paramecia, then dissolve again, the whole thing falls into —"

"One creature!" I said. "The whole thing is a single creature!"

An nodded vigorously. "Has to be to stay self-contained." The grin on his face whipped away like a shade snapped up on a window. A very serious look was underneath. "Even after I saw the big fellow mate, it took me a week to understand it was all one."

"But if goofus and the fishnet have paramecia —" I began. It seemed logical when I made the guess.

"You've seen one before."

I shook my head. "Not like that one, anyway. I once saw something similar, but it was much bigger, about six feet across."

An's seriousness was replaced by quivering horror. I mean he really

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started to shake. "How could you . . . *ever* even *see* all the . . . stuff inside, much less *catalogue* it? You say . . . *this* is complicated?"

"Hey, relax. Relax!" I said. He did. Like that. "It was much simpler," I explained and went on to describe the one our kids had made so many years ago as best I remembered.

"Oh," An said at last, his face set in its original impassivity. "It wasn't micro-organisms. Simple. Yes." He looked at the pavement. "Very simple." When he looked up, another expression had scrambled his features. I took a moment to identify it as confusion. "I don't see the point at all."

There was surprising physical surety in the boy's movement; his nervousness was a cat's, not a human's. But it was one of the psychological qualities of golden.

"Well," I said, "it showed the kids a picture of the way the cycles of life progress."

An rattled his chain. "That is why they gave us these things. But everything in the one you had was so primitive. It wasn't a very good picture."

"Don't knock it," I told him. "When I was a kid, all I had was an ant-colony. I got my infantile weltanschaung watching a bunch of bugs running around between two plates of glass. I think I would have been better prepared by a couple of hungry rats on a treadmill. Or maybe a torus-shaped fish tank alternating sharks with schools of piranhas: Get them all chasing around after each other real fast —"

"Ecology wouldn't balance," An said. "You'd need snails to get rid of the waste. Then a lot of plants to reoxygenate the water, and some sort of herbivore to keep down the plants because they'd tend to choke out everything since neither the sharks nor the piranhas would eat them." Kids and their damn literal minds. "And if the herbivores had some way to keep the sharks off, then you might do it."

"What's wrong with the first one I described?"

The explanation worked around the muscles of his face. "The lizards, the segment worms, the plants, worts, all their cycles were completely circular. They were born, grew up, reproduced, maybe took care of the kids a while, then died. Their only function was reproduction. That's a pretty awful picture." He made an unintelligible face.

Something about this wise-alecky kid who was golden, younger than Alegra, older than Teehalt, I liked.

"There are stages in here," An tapped his globe with his pinky nail, "that don't get started on their most important functions till after they've reproduced and grown up through a couple more metamorphoses as well. Those little green worms are a sterile end stage of the blue feathery things. But they put out free phosphates that the algae live on. Everything else, just about, lives on the algae — except the thorn balls. They eat the worms when they die. There's phagoytes in there that ingest the dust-things when they get out of the bubble and start infecting the liquid." All at once he got very excited. "Each of us in the class got

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one of these! They made us figure them out! Then we had to prepare these recordings on whether the reproductive process was the primary function in life or an adjunctive one. Something white frothed the corners of his mouth. "I think grown-ups should just *leave* their kids the hell *alone,* go on and do something *else,* stop bothering us! That's what I said! That's what I *told* them!" He stopped, his tongue flicked the foam at the cusp of his lips; he seemed all right again.

"Sometimes," I said evenly, "if you leave them alone and forget about them, you end up with monsters who aren't kids any more. If you'd been left alone, you wouldn't have had a chance to put your two cents in in the first place, and you wouldn't have that thing around your neck." And he was really trying to follow what I was saying. A moment past his rage, his face was as open and receptive as a two-year-old's. God, I want to stop thinking about Antoni!

"That's not what I mean." He wrapped his arms around his shoulders and bit on his forearm pensively.

"An, you're not stupid, kid-boy. You're cocky, but I don't think you're mean. You're golden." There was all my resentment, out now, Ratlit. There it is, Alegra. I didn't grow up with the word, so it meant something different to me. An looked up to ingest my meaning. The toothmarks were white on his skin, then red around that. "How long have you been one?"

He watched me, arms still folded. "They found out when I was seven."

"That long ago?"

"Yes." He turned and started walking again. "I was very precocious."

"Oh." I nodded. "Just about half your life then. How's it been, little brother, being a golden?"

An dropped his arms. "They take you away from your group a lot of time." He shrugged. "Special classes. Training programs. I'm psychotic."

"I never would have guessed." What would you call Ratlit or Alegra?

"I know it shows. But it gets us through the psychic pressures at the reality breakdown at twenty thousand light-years. It does. For the past few years, though, they've been planting the psychosis artificially, pretty far down in the preconscious, so it doesn't affect our ordinary behavior as much as it does the older ones. They can use this process on anybody whose hormone system is even close to golden. They can get a lot more and a lot better quality golden that way than just waiting for us to pop up by accident."

As I laughed, something else struck me. "Just what do you need a job out here for, though? Why not hitch out with some cousin or get a job on one of the intergalactics as an apprentice?"

"I have a job in another galaxy. There'll be a ship stopping for me in two months to take me out. A whole lot of Star-pits have been established in galaxies half way to Un-dok. I'll be going back and forth, managing roboi-equipment,

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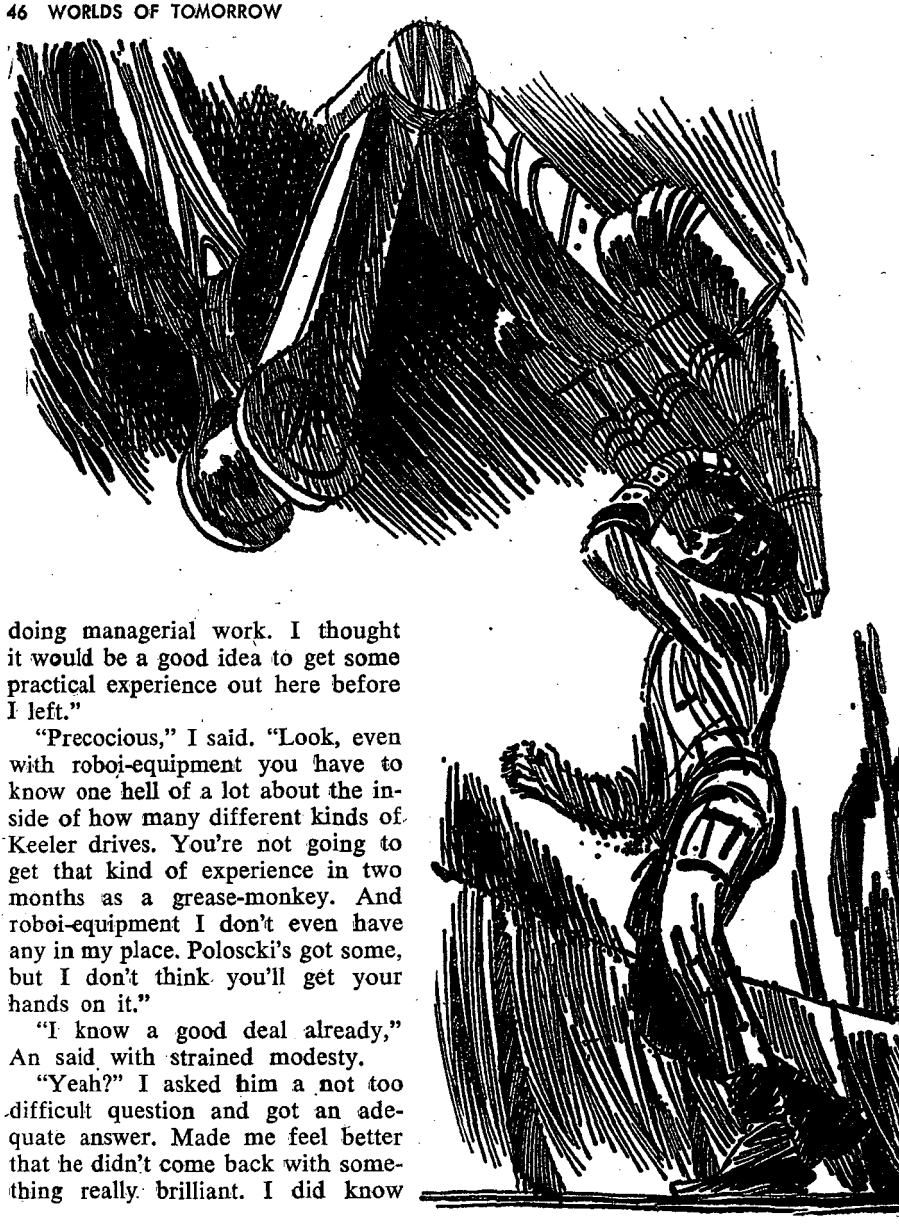

doing managerial work. I thought it would be a good idea to get some practical experience out here before I left."

"Precocious," I said. "Look, even with roboi-equipment you have to know one hell of a lot about the inside of how many different kinds of Keeler drives. You're not going to get that kind of experience in two months as a grease-monkey. And roboi-equipment I don't even have any in my place. Poloscki's got some, but I don't think you'll get your hands on it."

"I know a good deal already," An said with strained modesty.

"Yeah?" I asked him a not too difficult question and got an adequate answer. Made me feel better that he didn't come back with something really brilliant. I did know

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more than he did. "Where'd you learn?"

"They gave me the information the same way they implanted my psychosis."

"You're pretty good for your age. Dear old Luna Vocational! Maybe educational methods have improved a bit. Come to think of it, I was just as old as you when I started playing around with those keeler models. Dozens and dozens of helical inserts —"

"And those oily organum sensitives in all that graphite. Yes, brother. But I've never even had my hands in a waldo."

I frowned. "Hell, when I was younger than you, I could —" I stopped. "Of course, with roboi-equipment, you don't need them.

But it's not a bad thing to know how they work, just in case."

"That's why I want a job." He hooked one finger on his chain. "Brother-in-law Sandy and I got to talking, so I asked him about working here. He said you might help me get in someplace."

"I'm glad he did. My place only handles big ships, and it's all waldo. Me and an assistant can do the whole thing. Poloscki's place is smaller, but handles both inter- and intragalactic jobs, so you got more variety and a bigger crew. You find Poloscki, say I sent you, tell what you can do and why you're out here. Belt or no, you'll probably get something better than a monkey."

"Thanks, brother."

We turned off Calle-D. Poloscki's hangar was ahead. Dull thunder sounded over the roof as a ship departed.

"As soon as I despair of the younger generation," I told him, "one of you kids comes by and I start to think there's hope again. Granted you're a psychopath, you're a lot better than some of your older, distant relations."

An looked up at me, apprehensive.

"You've never had a run-in with some of your cousins out here. But don't be surprised if you're dead tomorrow and your job's been inherited by some character who decided to split your head open to check on what's inside. I try to get used to you, behaving like something that isn't even salvage. But, boy, can your kind really mess up a guy's picture of the world."

"And what the hell do you expect

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us to act like?" An shot back. Spittle glittered on his lips again. "What would *you* do if you were trapped like *us*?"

"Huh?" I said questioningly. You trapped?"

"Look." A spasm passed over his shoulders. "The peychotechnician who made sure I was properly psychotic *wasn't* a golden, *brother!* You *pay* us to bring back to weapons, dad! *We* don't fight your damn wars, *grampa! You're* the ones who take us away from our groups, say we're *too* valuable to submit to *your* laws, then deny us our heredity because we don't *breed* true, no-relative-of-*mine!*"

"Now wait a minute!"

An snatched the chain from around his neck and held it taut in front of him. His voice ground to a whisper, his eyes glittered. "I strangled one of my classmates with this chain, the one I've got in my hands now." One by one, his features blanked all expression. "The teacher took it away from me for a week, as punishment for killing the little girl."

The whisper stopped decibels above silence, then went on evenly. "Out here, nobody will punish me. And my reflexes are faster than yours."

Fear lashed my anger as I followed the insanity flickering in his eyes.

"Now!" He made a quick motion with his hands; I ducked. "I give it to you!" He flung the chain toward me. Reflexively I caught it. An turned away instantly and stalked into Poloscki's.

X

When I burst through the rattling hangar door at my place, the lift was coming down. Sandy yelled through the mesh walls, "Did he get the job?"

"Probably," I yelled back, going toward the office.

I heard the cage settle on the silicon cushion. Sandy was at my side a moment later, grinning. "So how do you like my brother-in-law, Androcles?"

"Brother-in-law?" I remembered An using the phrase, but I'd thought it was part of the slang which is golden. Something about the way Sandy said it though. "He's your *real* brother-in-law?"

"He's Joey's kid brother. I didn't want to say anything until after you met him." Sandy came along with me toward the office door. "Joey wrote me again and said since An was coming out here he'd tell him to stop by and see me and maybe I could help him out."

"Now how the hell am I supposed to know who Joey is?" I pushed open the door. It banged the wall.

"He's one of my husbands, the one who wrote me that letter you told me you'd read."

"Oh, yeah. Him." I started stalking papers.

"I thought it was pretty nice of him after all that to tell An to look me up when he got out here. It means there's still somebody left who doesn't think I'm a complete waste. So what do you think of Androcles?"

"He's quite a boy." I scooped up the mail that had come in after

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lunch, started to go through it but put it down to hunt for my coveralls.

"An used to come visit us when he got his one weekend a month off from his training program as golden," Sandy was going on. "Joey's and An's parents lived in the reeds near the estuary. But we lived back up the canyon by Chroma Falls. An and Joey were pretty close, even though Joey's my age and An was only eight or nine back then. I guess Joey was the only one who really knew what An was going through, since they were both golden."

Surprised and shocked, I turned back to the desk. "You were married with a golden?" One of the letters on the top of the pile was addressed to Alegra, from Carlson's Labs. I had a carton of the kids' junk in the locker and had gotten the mail — there wasn't much — sent to the hangar, as though I were waiting for somebody to come for it.

"Yeah," Sandy said, surprised at my surprise. "Joey."

So I wouldn't stand there gaping, I picked up Alegra's letter.

"Since the traits that are golden are polychromazoic, it dies out if they only breed with each other. There's a big campaign back in galactic center to encourage them to join heterogeneous proke-groups."

"Like blue-point Siamese cats, huh?" I ran my blackened thumbnail through the seal.

"That's right. But they're *not* animals, boss. I remember what they put that kid-boy through for psychotic reinforcement of the factors that were golden to make sure they stuck. It tore me up to hear him talk about it when he'd visit us."

I pulled a porta-pix out of Alegra's envelope. Carlson's tries to personalize its messages.

"I'm sure glad they can erase the conscious memory from the kids' minds when they have to do that sort of stuff."

"Small blessings and all that," I said, flipping the porta-pix on.

Personalized but mass produced. ". . . blessed addit . . ." the little speaker echoed me. Poloscki and I had used Carlson's a couple of times, I know. I guess every other mechanic up here had too. The porta-pix had started in the middle. Now it hummed back to the beginning.

"You know," Sandy went on, "Joey was different, yeah, sort of dense about somethings . . ."

"Alegra," beamed the chic, grandmotherly type Carlson's always uses for messages of this sort, "we were so glad to receive the urine sample you sent us by Mr. Ratlit last Thursday . . ."

". . . even so, Joey was one of the sweetest men or women I've ever known. He was the easiest person in the group to live with. Maybe it was because he was away a lot . . ."

". . . and now, just a week later — remember, Carlson's gives results immediately and confirms them by personalized porta-pix in seven days — we are happy to tell you that there will be a blessed addition to your group. However . . ."

". . . All right, he was different,

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reacted funny to a lot of things. But nothing like this rank, destructive stupidity you find out here at the Star-pit . . ."

". . . the paternity is not Mr. Ratlit's. If you are interested, for your eugenic records, in further information, please send us other possible urine samples from the men in your group, and we will be glad to confirm paternity . . ."

". . . I can't undestand the way people act out here, boss. And that's why I'm pushing on."

". . . Thank you so much for letting us give you this wonderful news. Remember, when in doubt, call Carlson's."

I said to Sandy, "You were married with — you loved a golden?"

Unbidden, the portapix began again. I flipped it off without looking.

"Sandy," I said, "you were hired because you were a fair mechanic and you kept off my back. Do what you're paid for. Get out of here!"

"Oh. Sure, boss." He backed quickly from the office.

I sat down.

Maybe I'm old fashioned, but when someone runs off and abandons a sick girl like that, it gets me. That was the trip to Carlson's, the one last little favor Ratlit never came back from. On the spot results, and formal confirmation in seven days. In her physical condition, pregnancy would have been as fatal as the withdrawal. And she was too ill for any abortive method I know of not to kill her. On the spot results. Ratlit must have known all that too when he got the results back, the results that Alegra was probably afraid of, the results she sent him to find. Ratlit knew Alegra was going to die anyway. And so he stole a golden belt. "Loving someone, I mean really loving someone —" Alegra had said. When someone runs off and leaves a sick girl like that, there's got to be a reason. It came together for me like two fissionables. The explosion cut some moorings in my head I thought were pretty solidly fixed.

I pulled out the books, plugged in the computer, unplugged it, put the books away and stared into the ecologarium in my fist.

Among the swimming, flying, crawling things, mating, giving birth, growing, changing, busy at whatever their business was, I picked out those dead-end green worms. I hadn't noticed them before because they were at the very edge of things, bumping against the wall. After they released their free phosphates and got tired of butting the shell, they turned on each other and tore themselves to pieces.

Fear and anger is a bad combination in me.

I came close to being killed by a golden once, through that meanness and stupidity.

The same meanness and stupidity had killed Alegra and Ratlit.

And now when this damn kid threatens to — I mean at first I had thought he was threatening to —

I reached Gerg's a few minutes after the daylights went out and the street lamps came on. But I'd stopped in nearly a dozen places on

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the way. I remember trying to explain to a sailor from an star-shuttle who was just stopping over at the Star-pit for the first time and was all upset because one woman golden had just attacked another with a broken glass. I remember saying to the three-headed bulge of his shoulder, ". . . an ant-colony! You know what it is, two pieces of glass with dirt between them, and you can see all the little ants make tunnels and hatch eggs and stuff. When I was a kid, I had an ant-colony . . ." I started to shake my hand in his face. The chain from the ecologarium was tangled up in my fingers.

"Look." He caught my wrist and put it down on the counter. "It's all right now, pal. Just relax."

"You look," I said as he turned away. "When I was a kid, all I had was an *ant*-colony!"

He turned back and leaned his rusty elbow on the bar. "Okay," he said affably. Then he made the most stupid and frustrating mistake he possibly could have just then. "What about your aunt?"

"My mother."

"I thought you were telling me about your aunt?"

"Naw," I said. "My aunt, she drank too much. This is about my mother."

"All right. Your mother then."

"My mother, see, she always worried about me, getting sick and things. I got sick a lot when I was little kid. She made me mad! Used to go down and watch the ships take off from a place they called the Brooklyn Navy Yards. They were ships that went to the stars."

The sailor's oriental face grinned. "Yeah, me too. Used to watch 'em when I was a kid."

"But it was raining, and she wouldn't let me go!"

"Aw, that's too bad. Little rain never hurt a kid. Why didn't she call up and have it turned off so you could go out? Too busy to pay attention to you, huh? One of my old men was like that."

"Both of mine were," I said. "But not my ma. She was all over me all the time when she was there. But she made me mad!"

He nodded with real concern. "Wouldn't turn off the rain."

"Naw, couldn't. You didn't grow up where I did, narrow-minded, dark-side world. No modern conveniences."

"Off the main trading routes, huh?"

"Way off. She wouldn't let me go out, and that made me mad."

He was still nodding.

"So I broke it!" My fist came down hard on the counter, and the plastic globe in its brass cage clacked on the wood. "Broke it! Sand, glass all over the rug, on the window sill!"

"What'd you break?"

"Smashed it, stamped on it, threw sand whenever she tried to make me stop!"

"Sand? You lived on a beach? We had a beach when I was a kid. A beach is nice for kids. What'd you break?"

"Let all the damn bugs out. Bugs in everything for days. Let 'em all out."

"Didn't have no bugs on our

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beach. But you said you were off the main trading routes."

"Let 'em *out!*" I banged my fist again. "Let *every*body out, whether they like it nor not! It's their problem whether they make it, not mine! Don't care, I don't —" was laughing now.

"She let you go out, and you didn't care?"

My hand came down on top of the metal cage, hard. I caught my breath at the pain. "On our beach," I said, turning my palm up to look. There were red marks across it. "There weren't any bugs on our beach." Then I started shaking.

"You mean you were just putting me on, before, about the bugs. Hey, are you all right?"

". . . broke it," I whispered. Then I smashed fist and globe and chain into the side of the counter. Let em *out!*" I whirled away, clutching my bruised hand against my stomach.

"*Watch* it, kid-boy!"

"I'm not a kid-boy!" I shouted. "You think I'm some stupid, half-crazy kid!"

"So you're a few years older than me."

"I'm not a kid any more!"

"So you're ten years older then Sirius, all right? Quiet down, or they'll kick us out."

I bulled out of Gerg's. A couple of people came after me because I didn't watch where I was going. I don't know who won, but I remember somebody yelling, "Get out! Get out!" It may have been me.

I remember later, staggering under the mercury street lamp, the world-wind slapping my face, stars swarming back and forth below me, gravel sliding under my boots, the toes inches over the Edge. The gravel clicked down the metal siding, the sound terribly clear as I reeled in the loud wind, shaking my arm against the night.

As I brought my hand back, the wind lashed the cold chain across my cheek and the bridge of my nose. I lurched back, trying to claw it away. But it stayed all tangled on my fingers while the globe swung, gleaming in the street light. The wind roared. Gravel chattered down the siding.

Later, I remember the hangar door ajar, stumbling into the darkness, so that in a moment I was held from plummeting into nothing only by my own footsteps as black swerved around me. I stopped when my hip hit a work bench. I pawed around under the lip of the table till I found a switch. In the dim orange light, racked along the back of the bench in their plastic shock-cases, were the row of master-gauntlets. I slipped one out and slid my hand into it.

"Who's over there?"

"Go 'way, Sandy." I turned from the bench, switched up the power on the wrist controls. Somewhere in the dark above, a fifteen-foot slave-hand hummed to life.

"Sorry, buster. This isn't Sandy. Put that down and get away from there."

I squinted as the figure approached in the orange light, hand extended, I saw the vibra-gun and didn't bother to look at the face.

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Then the gun went down. "Vyme, baby? That you? What the hell are you doing here this hour of the night?"

"Poloscki?"

"Who'd you think it was?"

"Is this your place?" I looked around, shook my head. "But I thought it was mine." I shook my head again.

Poloscki sniffed. "Hey, have you been a naughty kid-boy tonight!"

I swung my hand, and the slave-hand overhead careened twenty feet.

The gun jumped. "Look, you mess up my waldo and I will kill you, don't care who you are! Take that thing off."

"Very funny." I brought the talon down where I could see it clawing shadow.

"Come on, Vyme. I'm serious. Turn it off and put it down. You're a mess now and you don't know what you're doing."

"That kid, the golden. Did you give him a job?"

"Sure. He said you sent him. Smart so and so. He rehulled a little yacht with the roboi-anamechania-katasthysizer, just to show me what he could do. If I knew a few more people who could handle them that well, I'd go all roboi He's not worth a damn with a waldo, but as long as he's got that little green light in front of him, he's fine."

I brought the talons down another ten feet so that the spider hung between us. "Well, I happen to be very handy with a waldo, Poloscki."

"Vyme, you're gonna get *hurt* . . ."

"Poloscki," I said, "will you stop coming on like an over-protective aunt? I don't need another one."

"You're very drunk, Vyme."

"Yeah. But I'm no clumsy kid-boy who is going to mess up your equipment."

"If you do, you'll be —"

"Shut up and watch." I pulled the chain out of my pouch and tossed it onto the concrete floor. In the orange light you couldn't tell whether the cage was brass or silver.

"What's that?"

The claws came down, and the fine-point tips, millimeters above the floor, closed on the ecologarium.

"Oh, hey! I haven't seen one of those since I was ten. What are you going to do with it? Those are five-hundred-to-one strength, you know. You're gonna break it."

"That's right. Break this one too."

"Aw, come on. Let me see it first."

I lifted the globe. "Could be an eggshell," I said. "Drunk or sober I can handle this damn equipment, Poloscki."

"I haven't seen one for years. Used to have one."

"You mean it wasn't spirited back from some distant galaxy by a golden, from some technology beyond our limited ken?"

"Product of the home spiral. Been around since the fifties."

I raised it over Poloscki's extended hand.

"They're supposed to be very educational. What do you want to break it for?"

"I never saw one."

"You came from someplace off

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the routes, didn't you. They weren't that common. Don't break it."

"I want to."

"Why, Vyme?"

Something got wedged in my throat. "Because I want to get out, and if it's not that globe, it's going to be somebody's head." Inside the gauntlet my hand began to quiver. The talons jerked. Poloscki caught the globe and jumped back.

"Vyme!"

"I'm hanging on here at the Edge." My voice kept getting caught on the things in my throat. "I'm useless, with a bunch of monsters and fools!" The talons swung, contracted, clashed on each other. "And then when the children . . . when the *children* get so bad you can't even reach them. . . ." The claw opened, reached for Poloscki who jumped back in the half-dark.

"Damn it, Vyme —"

". . . can't even reach the children any more." The talon stopped shaking, came slowly back, knotting. "I want to break something and get out. Very childishly, yes. Because nobody is paying any attention to *me*." The fist jumped. "Even when I'm trying to help. I *don't* want to hurt anybody any *more*. I *swear* it, so help me, I swear —"

"Vyme, take off the glove and listen!"

I raised the slave-hand because it was about to scrape the cement.

"Vyme, I want to pay some attention to you." Slowly Poloscki walked back into the orange light. "You've been sending me kids for five years now, coming around and checking up on them, helping them out of the stupid scrapes they get in. They haven't all been Ratlits. I like kids too. That's why I take them on. I think what you do is pretty great. Part of me loves kids. Another part of me loves you."

"Aw, Poloscki . . ." I shook my head. Somewhere disgust began.

"It doesn't embarrass me. I love you a little and wouldn't mind loving you a lot. More than once I've thought about asking you to start a group."

"*Please*, Poloscki. I've had too many weird things happen to me this week. Not tonight, huh?" I then turned the power off in the glove.

"Love shouldn't frighten you, no matter when or how it comes, Vyme. Don't run from it. A marriage between us? Yeah, it would be a little hard for somebody like you, at first. But you'd get used to it before long. Then when kids came around, there'd be two —"

"I'll send Sandy over," I said. "He's the big-hearted, marrying kind. Maybe he's about ready to try again." I pulled off the glove.

"Vyme, don't go out ike that. Stay for just a minute."

"Poloscki," I said, "I'm just not that god damn drunk!" I threw the glove on the table.

"Please, Vyme."

"You're gonna use your gun to keep me here?"

"Don't be like —"

"I hope the kids I send over here appreciate you more than I do right now. I'm sorry I busted in here. Good night!"

I turned from the table.

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Nine thousand miles away the Stellarplex turned too. Circles of silver dropped through the roof. Behind the metal cage of the relaxed slave-claw I saw Poloscki's large, injured eyes, circles of crushed turquoise, glistening now.

And nine feet away someone said, "Ma'am?"

Poloscki glanced over her shoulder. "An, you awake?"

An stepped into the silver light, rubbing his neck. "That office chair is pretty hard, sister."

"He's here?" I asked.

"Sure," Poloscki said. "He didn't have any place to stay so I let him sleep in the office while I finished up some work in the back. Vyme, I meant what I said. Leave if you want, but not like this. Untwist."

"Poloscki," I said, "you're very sweet, and affectionate and a good mechanic too. But I've been there before. Asking me to join a group is like asking me to do something obscene. I know what I'm worth."

"I'm also a good businesswoman. Don't think that didn't enter my head when I thought about marrying you." An came and stood beside her. He was breathing hard, the way an animal does when you wake it all of a sudden.

"Poloscki, you said it, I didn't: I'm a mess. That's why I'm not with my own group now."

"You're not always like this. I've never seen you touch a drop before."

"For a while," I said, "it happened with disgusting frequency. Why do you think my group dropped me?"

"Must have been a while ago. I've known you a long time. So you've grown up since then. Now it only happens every half dozen years or so. Congratulations. Come have some coffee. An, run into the office and plug in the pot. I showed you where it was." An turned like something blown by the world-wind and was gone in the shadow. "Come on," Poloscki said. She took my arm and I came with her. Before we left the light, I saw my reflection in the polished steel tool-cabinet door.

"Aw, no." I pulled away from her. "No, I better go home now."

"Why? An's making coffee."

"The kid. I don't want the kid to see me like this."

"He already has. Won't hurt him. Come on."

XI

When I walked into Poloscki's office, I felt I didn't have a damn thing left. No. I had one. I decided to give it away.

When An turned to me with the cup, I put my hands on his shoulders. He jumped, but not enough to spill the coffee. "First and last bit of alcoholic advice for the evening, kid-boy. Even if you are crazy, don't go around telling people who are not golden how they've trapped you."

An ducked from under my hands, put the coffee on the desk, and turned back. "I didn't say you trapped us."

"You said we treated you lousy and exploited you, which we may, and that this trapped you —"

"I said you exploited us, which you do, *and* that we were trapped. I *didn't* say by what."

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Poloscki sat down on the desk, picked up my coffee and sipped it.

I raised my head. "All right. Tell me how you're trapped."

"Oh, I'm sorry," Poloscki said. "I started drinking your coffee."

"Shut up. How are you trapped, An?"

He moved his shoulders around as though he was trying to get them comfortable. "It started in Tyber-44 cluster. Golden were coming back with really bad psychic shock."

"Yes. I'd heard about it. That was a few years back."

An's face started to twitch, the muscles around his eyes twisted below the skin. "*Something* out there. . ."

I put my hand on the back of his neck, my thumb in the soft spot behind his ear and began to stroke, the way you get a cat to calm down. "Take it easy. Just tell me."

"Thanks," An said and bent his head forward. "We found them first in Tyber-44, but then they turned up all *over,* on half the planets in every galaxy that could support any life, and a lot more that shouldn't have been able to at all." His breathing grew coarser. I kept rubbing, and it slowed again. "I guess we have such a funny psychology that working with them, studying them, even thinking about them too much . . . there's something about them, that changes our sense of reality. The shock was bad."

"An," I said, "to be trapped, there has to be somewhere you can't go. For it to bug you, there has to be something else around that can."

He nodded under my hand, then straightened up. "I'm all right now. Just tired. You want to know where and what?"

Poloscki had put down the coffee now and was dangling the chain. An whirled to stare at it directly.

"Where?" he said. "Other universes."

"Galaxies further out?" asked Poloscki.

"No. Completely different matrices of time and space." Staring at the swinging ball seemed to calm him even more. "No physical or temporal connection to this one at all."

"A sort of parallel —"

"Parallel? Hell!" It was almost a drawl. "There's nothing parallel about them. Out of the billions-to-the-billionth of them, most are hundreds of times the size of ours and empty. There are a few, though, whose entire spatial extent is even smaller than this galaxy. Some of them are completely dense to us, because even though there seems to be matter in them, distributed more or less as in this universe, there's no electromagnetic activity at all. No radio waves, no heat, no light." The globe swung, the voice was a whisper.

I closed my fist around the globe and took it from Poloscki. "How do you know about them? Who brings back the information? Who is it who can get out?"

Blinking, An looked back at me. When he told me, I began to laugh. To accommodate the shifting reality tensions, the psychotic personality that is golden is totally labile. An laughed with me, not

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knowing why. He explained through his torrential hysteria how with the micro-micro surgical techniques from Tyber-44 they had read much of the information from a direct examination of the creature's nervous system, which covered its surface like velvet. It could take intense cold or heat, a range of pressure from vacuum to hundreds of pounds per square millimeter; but a fairly small amount of ultraviolet destroyed the neural synapses, and they died. They were small and deceptively organic because in an organic environment they appeared to breathe and eat. They had four sexes, two of which carried the young. They had clusters of retractible sense organs that first appeared to be eyes, but were sensitive to twelve distinct senses, stimulation for three of which didn't even exist in our continuum. They traveled around on four suction cups when using kinetic motion for ordinary traversal of space, were small, and looked furry. The only way to make them jump universes was to scare the life out of them. At which point they just disappeared.

An kneaded his stomach under his belt to ease the pain from so much laughter. "Working with them at Tyber-44 just cracked up a whole bunch of golden." He leaned against the desk, panting and grinning. "They had to be sent home for therapy. We still can't think about them directly, but it's easier for us to control what we think about than for you; that's part of being golden. I even had one of them for a pet, up until yesterday. The damn creatures are either totally apathetic, or vicious. Mine was a baby, all white and soft." He held out his arm. "Yesterday it bit me and disappeared." On his wrist there was a bluish place centered on which was a crescent of pin-pricks. "Lucky it was a baby. The bites infect easily."

Poloscki started drinking from my cup again as An and I started laughing all over.

Walking back that night, black coffee slopped in my belly.

There are certain directions in which you cannot go. Choose one in which you can move as far as you want. Sandy said that? He did. But there was something about Sandy, very much like someone golden. It doesn't matter how, he's going on.

Under a street lamp I stopped and lifted up the ecologarium. The reproductive function, was it primary or adjunctive? If, I thought with the whisky lucidity always suspect at dawn, you consider the whole ecological balance a single organism, it's adjunctive, a vital reparative process along with sleeping and eating, to the primary process which is living, working, growing. I put the chain around my neck.

I was still half soused, and it felt bad. But I howled. Androcles, is drunken laughter appropriate to mourn all my dead children? Perhaps not. But tell me, Ratlit, Androcles, tell me Alegra, what better way to launch my live ones who are golden into night? I don't know. I know I laughed. Then I put my fists into my overall pouch and crunched along the Edge toward home. END

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The Psychiatric Syndrome in Science Fiction

by SAM MOSKOWITZ

Sf's favorite historian looks at the part played by psychiatry in sf stories . . . and sf writers!

The world at large always suspected that readers of science fiction were candidates for the couch, but that the subject matter could infect the psychiatrist as well as the patient must have come as a bit of a shock to them when they read a 20,000-word chapter of just such a circumstance in the popular book *The Fifty-Minute Hour* by Dr. Robert Lindner (Rinehart, 1955) titled "The Jet Propelled Couch." When the chapter was reprinted in *The Magazine of Fantasy and Science Fiction* (January, 1956), editor Anthony Boucher termed it "an article," underscoring the author's claim that this piece, like others in the book, was based on actual case histories.

With the skill of a master storyteller, Dr. Robert Lindner tells of the referral of a young physicist to him by a medic in a southwestern government project. The patient, whom he calls Kirk Allen, has been lapsing into a dreamworld of his own creation with such frequency and absorption that he is rendered useless for increasingly long periods during his working day.

Kirk Allen has read a series of books in which his name appears as the protagonist, and he fancies that the novels are an actual account of his adventures in the future. He tries to "remember" what happens *after* the last book in the series closes and succeeds adequately enough to find himself on another planet, where

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he is lord of a fantastic empire. So real is this world to which he can return at will that he is able to detail for the psychiatrist a virtual encyclopedia of its inhabitants, customs, creatures and geography, complete with 306 illustrations, many in color. From hints given by the author it becomes apparent that Kirk Allen's real name is John Carter and his "imaginary" land, the Mars of Edgar Rice Burroughs.

Confronted with a difficult case, Dr. Lindner takes the desperate expedient of attempting to enter the dreamworld of his patient in hopes of finding errors and discrepancies in its nomenclature which will help him disprove its reality to the dreamer. His qualifications are impeccable for, in addition to his professional qualifications, he points out: "I can only say that I have been, since learning to read an *aficianado* . . . introduced to *Amazing Stories* by a school mate. . . my passage from BEM's through Burroughs to Wells, Heard and Stapledon was swift. At forty I remain a rather reluctant addict, fighting the temptations of van Vogt, Bradbury, and Co., but succumbing blissfully to the appeal of a new Orwell (alas, there will be no more from him), a Wylie, or a Huxley."

Soon the psychiatrist is filling in information gaps in the strange world of Kirk Allen with enthusiasm, finding flaw after flaw but ingeniously devising logical explanations to reconcile them. Eventually he senses an increasing lack of interest on the part of his patient in carrying the game any further. Kirk Allen has been cured for some time, but is now continuing a charade so as not to spoil the psychiatrist's quite evident involvement and enjoyment.

Badly shaken, Dr. Lindner philosophizes: ". . . I know that my chair and the couch are separated only by a thin line. I know that it is, after all, but a happier combination of accidents that determines, finally, who shall lie on that couch, and who shall sit behind it."

"The Jet Propelled Couch" was, in an unwitting sense, a rebuttal to psychiatrist Robert Plank, LL.D., M.S.W., who had asserted in a long article in the July, 1954, *International Record of Medicine and General Practice Clinics* titled "The Reproduction of Psychosis in Science Fiction" that the plot outlines of science-fiction stories are "to a higher degree than other literature, morphologically similar to schizophrenic manifestations, especially of the paranoid type." He implied that this reflected the mental condition of the writer and suggested that the writing of science fiction was for some a form of therapy enabling them to retain their sanity in a troubled world.

When asked by George Dusheck, a reporter from the *San Francisco News*, for a comment on Dr. Plank's statement, John W. Campbell, editor of *Astounding Science Fiction*, who was attending the 12th World Science-Fiction Convention in San Francisco, replied for the paper's September 4, 1954, edition: "I would be more impressed with Plank's view . . . if psychiatry had any good

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notion of what it is talking about when it uses the word 'schizophrenia.'"

"Yet, Dr. Plank's article was more friendly than hostile, and he appeared to be a regular reader of science fiction. The president of MD publications, which published *International Record of Medicine and General Practice Clinics,* could not be considered a hostile party for he was Felix Marti-Ibanez, M.D., a writer of fantasy who has had three stories in *The Magazine of Fantasy and Science Fiction* and whose cultural medical publication *MD* runs features on aspects of science fiction.

True or otherwise, "The Jet Propelled Couch" epitomized a phase that science fiction was passing through at the time, spearheaded by Horace L. Gold and *Galaxy Science Fiction,* that was so pronounced that for a period the science-fiction fans referred to the publication as "the magazine of psychiatric fiction." It was not merely that stories hinged on the psychological effects of future technological events on the characters of the stories (that was actually the mainstream of modern science fiction), but that a substantial body of science fiction actually was directly concerned with all the paraphernalia and accouterments of psychiatry and psychoanalysis.

While *Galaxy Science Fiction* printed the largest share of such stories, they were also to be found quite frequently in *The Magazine of Fantasy and Science Fiction* and *Astounding Science Fiction.* Because *Galaxy Science Fiction,* between the years 1950 and 1955 paid just about the top rates in the field (3c to 5c a word), writers trying to sell to Gold wrote what they thought he would buy; and those he didn't buy, having merit, appeared elsewhere.

When writing of the psychiatric in science fiction, it should also be made clear that the great body of "mad-scientist" stories that was part and parcel of the early years of magazine science fiction is excluded. The "mad scientist" was a literary device, not a mental abberation. Nor is the story into which the psychiatrist might read special meaning considered.

The greatest and perhaps the very first of all science fiction based on a psychiatric theme was *Strange Case of Dr. Jekyll and Mr. Hyde* by Robert Louis Stevenson, telling of Henry Jekyll, M.D., who discovered chemicals that could alter his personality, releasing the dark side of it, and then found himself helpless to permanently restore his true state. Sigmund Freud was but 30 years of age when Stevenson's remarkable short novel appeared, so the *Strange Case of Dr. Jekyll and Mr. Hyde* preceded the general distribution of literature on the psychoanalytical interpretations of man's behavior. Lettice Cooper, in her short biography *Robert Louis Stevenson* (Home Van Thal Ltd., London, 1947) observed: "Stevenson's ego feared his id. He believed in the power of evil in his own unconscious nature, and was afraid if he allowed it to come up, it would swamp his whole personality."

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The rise of LSD has converted the *Strange Case of Dr. Jekyll and Mr. Hyde* from an allegorical horror fantasy into science fiction, for the "mind-expanding" drugs are capable of mentally bringing about changes similar to those attributed to chemicals in Stevenson's work.

The publication of *Strange Case of Dr. Jekyll and Mr. Hyde* was historic on more than its science-fiction count. Released in January, 1886, by Longmans, Green and Co., London, the publisher decided on a daring experiment. He would bring out a cheap edition *first*. This cheap edition would be paper bound, printed by the tens of thousands and sold for only a shilling (about 25c). He suspected that it would have great general appeal. If it caught on, a deluxe edition for the carriage trade could follow.

Sales proved phenomenal. The publisher had a bestseller on his hands. And Stevenson, at a single thrust, gained a reputation as a major writer, which had eluded him for 13 years. The story, interestingly, had been inspired by a nightmare and had taken only six days to write (three if he had not burned the first version and rewritten it).

No major figure followed Stevenson's lead in writing science fiction based on mental disorder for 38 years.

David H. Keller, M.D., like Dr. Robert Lindner, was also a psychiatrist. When he appeared on the literary scene with "The Revolt of the Pedestrian" (*Amazing Stories*, February, 1928), science fiction in magazine format was not quite two years old. New writers of importance were being attracted to the medium, among them A. Hyatt Verrill, Miles J. Breuer, M.D., Bob Olsen and Francis Flagg. None of these men were youngsters, and most were professional men. Their subjects were considerably more adult then might have been expected from a fledgling literature, and Keller was by all odds the most thoughtful of them all.

"The Revolt of the Pedestrians" was his first sale, and it was made at the age of 47. It was a savage satire based on the spread of the automobile and the gradual loss of the use of legs by humans as they succumb to the lure of automatic conveyance. Humanity is divided into two groups. The automobilists, legs shrunken from non-use, but with advanced technical power, and the pedestrians, people with normal legs, who are regarded as less than human because of it and are hunted down and exterminated. When a daughter of a powerful leader of the automobilists proves a throwback and makes active use of her legs, "thousands of suggestions are made "from psycho-analysis to brutal splinting and bandaging of the girl's lower extremities," to correct this social defect.

She is one of the few survivors when the pedestrians invent a device that stops all power, and the legless automobilists, helpless, die by the millions. The pedestrians then return to a rural, happy life.

Overnight Keller was a big name in science fiction.

The first story had only once

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mentioned the word "psycho-analysis" in hyphenated form, but Keller's tales that followed swung more strongly in that direction. "Unlocking the Past" (*Amazing Stories,* September, 1928), a moving story of an invention that would make it possible for a child to tap ancestral memory, stopped just short of becoming a valid piece of psychiatric science fiction. He managed to hit the target with "The Insane Avalance" (*Amazing Stories Quarterly,* Summer, 1928), the fourth in a related series of stories published in the one issue under the unifying title of "The Menace." In the first three stories, the Negroes had failed in three major attempts to destroy the white power structure and gain superior status. Their leaders retreat to an equatorial island where they are joined by Dr. Abraham Flandings, a mulatto, who has been prevented from advancing himself as a psychiatrist because of his race. "I have always been interested in the mind and preferably in the abnormal, the unusual, the diseased mind," he explains. "My color made it hard for me. The study of medicine was difficult and the endeavor to become a psychiatrist almost insurmountable . . . In the United States there was practically no opening for anyone of my race." Dr. Flandings submits that he has an idea which he feels, if implemented, could topple the white race.

Back in the United States, techniques for construction with the use of glass as the basic building material advance tremendously. Soon, not only one-family homes, but apartments and commercial buildings are poured from glass, dropping prices far below anything previously believed possible. Even elevated highways are successfully constructed from glass.

Then, in a nation prosperous and happy, there comes a frightening rise in mental disorders. So great are the number of cases that facilities cannot be built fast enough to house them. Entire towns are fenced around and turned into concentration camps for the insane. Finally, a method is found of putting the insane into a state of suspended animation to cut down on the cost of caring for them.

The highly publicized idea proposed by R.C.W. Ettinger of freezing bodies of people who die, on the possibility that their bodies can be properly repaired and brought to consciousness at some future date, is suggested by indirection when Keller "says" of a man to be so treated: "Extremes of temperature will have no effect on his body. We have frozen rabbits in cold storage, then thawed them, and when they recover consciousness, they seem none the worse for the freezing."

It is eventually discovered that the effect of the glass on the rays of the sun is the basic cause of mental disorders, but by that time 120 million people have been put into suspended animation. The glass trust is shown to have been a calculated device of the Negro power group, who are tracked to their island lair by Taine of San Francisco. They are poisoned by Ebony Kate, one of their

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cohorts, before Taine can kill them.

Keller followed this tale immediately with "Stenographer's Hands" (*Amazing Stories Quarterly,* Fall, 1928), where big business breeds men and women for their ability to type and transcribe material. Gradually their fingers, eyes and entire psychology are altered so that they don't want to do anything else but efficiently accomplish their speciality. The "mechanization" ceases when the specially bred workers develop nocturnal epilepsy from strains of inbreeding; and after 200 years the entire plan collapses.

Still more directly in accord with the psychiatric (though with considerably more tongue in cheek) was his tale "The Moon Rays" (*Wonder Stories Quarterly,* Summer, 1930). As an experiment, a small nation is selected and valuable prizes offered to those people who can "see" the most imaginative objects in the face of the moon. People by the million spend hours every night staring at the lunar orb, trying to conceive of ever more original images. Quickly the crime rate increases, people tend to lose their inhibitions, there is a record number of marriages and a sharp increase in all types of mental conditions.

The population, it was explained, "entered into an unusual type of manic-depressive psychosis, mainly of the manic type, and this especially applied, as far as it could be determined, only to those who had, by participating in the contest, been exposed to the rays of the moon during this month." Keller's semi-spoof was based on a small amount of valid scientific data and a great deal of superstition which held that phases of the moon have to some extent affected the mentally ill (the word "lunacy" is derived from "luna").

In the late twenties psychiatrists were rare, and knowledge of the science, limited. Keller had virtually no competition in this area of science fiction. One other popular science fiction writer, Miles J. Breuer, an internist with a laboratory in Lincoln, Nebraska, had touched on the subject with passing references in a few of his stories. A considerable knowledge of psychoanalysis was displayed by him in his story "The Inferiority Complex" (*Amazing Stories,* September, 1930). This highly unusual story was illustrated with a group of photographs with superimpositions supplied by the author, showing gigantic bacteria threatening a man near a lake and in a laboratory. "The Inferiority Complex" dealt with a scientist who claimed to have bred huge bacteria, bigger than a man, in his laboratory. He was found to be suffering from "micromania," a condition in which the patient believes himself to be very small in size and which is said to be quite common. Inferiority complexes are actually a *mild* form of micromania, explaining the title of the story.

Breuer might have made a mark for himself in science fiction based on psychiatric themes, but he did not try again, whereas Keller persisted not only in the science-fiction magazines but in *Weird Tales,* bastion of the supernatural. There he

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had published "Creation Unforgiveable" (April, 1930), concerning a writer (obviously Keller himself) who builds a small writing shack (which he actually had) and becomes immersed in the composition of a prehistoric tale in which a brave cave man and an Amazon girl are captured by half-humans, half-apes and tied to a stake to be eaten by a scaled monster. Then, away from his typewriter on a social call, he is convinced his characters will perish if he does not write them out of the situation in time. Rushing back to help them, he falls and knocks himself unconscious. When he comes to, the shack and the typewriter are smashed; there are evidences of blood and large distinct tracks that sink a foot into the ground and lead to the entrance of a cave on the grounds.

This was a prelude to what is perhaps Keller's greatest tale of horror. "The Thing in the Cellar" (*Weird Tales,* March, 1932), which could technically qualify as science fiction. The story concerns a child born in an old English house, who is irrationally afraid of the cellar. He is even uneasy in the kitchen, from which a stairway leads to the cellar. The cellar is ordinary in most respects and has served generations of families. To cure the child's obsession, a doctor advises he be locked in the kitchen with the cellar door open to prove his fears are unfounded. When they finally enter the kitchen to release him, he is found clawed to death.

The bereaved father shakes the doctor and demands to know what killed his son. The answer of the physician is indecisive, but nevertheless shattering in its psychological implications:

"How do I know, Tucker?" he replied. "How do I know? Didn't you tell me that there was nothing there? Nothing down there? In the cellar?"

Almost as fine a story, but never truly appreciated because of its subtlety, was Keller's "No More Tomorrows" (*Amazing Stories,* December, 1932). A psychologist pinpoints the portion of the brain wherein man thinks ahead and makes plans for the future. He devises a test batch of a serum which will destroy that ability, making one incapable of comprehending or believing in a tomorrow, living only for today. He transacts a deal to sell that secret to the Russians so they can use it to immobilize the world and seize control. His girl feeds him the chemical in a drink, and he loses not only the ability to plan ahead, but faces death from the Russians, who think he has doublecrossed them. The Russians inform him that they plan to kill him the next day for his default. Instead of pleading for life he laughs: "Oh! This is too much . . . Why, if you are going to wait till tomorrow, you will never be able to kill me . . . *You cannot kill me tomorrow for I have no tomorrow!*"

There the story ends on a note of sublime irony: a man who cannot be forced or frightened by threats of *future* consequence, even though his attitude for the Russians means losing the world and to him, his life. Apart from its theme, this

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story is far above the ordinary in execution and stylistic craftmanship.

Keller's own background and life were almost as bizarre as his fiction, and from them he drew a great deal of the substantive horror reflected in his works. He was born in Philadelphia, December 23, 1880, and could trace his family in America back to before 1645. A sister, 18 months older than he, was the focus of his mother's attention, and he was ignored. At the age of six, when sent to school, he could speak so few words of English that he was returned home for being retarded in language. The only person in the world who could divine his needs and in any manner interpret his meaning was his older sister. When she died at the age of seven, he was cut off from the world, unable to communicate coherently with anyone.

The loss of her favorite child and the thought that her son's deficiency might prove a reflection on her motivated the mother to start a personal program of education at home to supplement private schooling. In three years the boy had achieved norm, with the exception that, having been taught English as though it were a second language, simplicity became the keynote of his phrasing.

He put this phase of his life into the story "The Lost Language" (*Amazing Stories,* January, 1934), concerning a little boy who appears normal in every respect but will not talk. He begins to write a strange language which no one can understand. Eventually it is determined that the language is an ancient form of Welsh, which only one old woman in the world might conceivably be able to interpret. She dies before they can reach her. The story ends when an older sister vows to devote herself to learning the boy's language and to keep him with her so that she may be his link with the world.

Keller had begun writing at the age of 14 for *The Mirror* the school paper of Philadelphia Central High. He continued writing while at the University of Pennsylvania studying medicine. Given his own way, he would have preferred to have taken a cultural course and become a teacher, but his father would only finance a "practical" education. At college, together with several friends, he launched a competitor to *The Black Cat* (a monthly magazine which featured only short stories) called *The White Owl,* which lasted seven issues and printed five of Keller's stories under the name of Henry Cecil.

A great struggle against the powerful will of his mother for control of his own destiny caused him to strike out for independence after his graduation in 1903, to marry and finally set up as a country doctor in Russell, Pa., a town of only three hundred people. Living almost by the barter system, he eventually broke ground and tried again, spending a "bitter" year at Pleasantville, N.J. Faced with complete professional and economic failure, he finally accepted a post as a junior physician in the Anna State Hospital of Illinois, a mental institution, in 1915.

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The U.S. entry into World War I found him a First Lieutenant in the medical corps. While in the service he wrote a primer and first reader for use in his school for illiterates at Camp Lee, Va. He then was assigned the job of trying to help shell-shocked soldiers at Camp Codie, New Mexico. He did outstanding work in restoring men to normalcy in a field that was little understood at the time.

At the close of the war he took a post as assistant superintendent of the state hospital for the mentally ill at Pineville, Louisiana. He spent 10 years there and drew heavily upon his experiences for stories he later wrote. He resigned when Huey Long became governor of the state.

He wrote constantly for his own pleasure, accumulating several shelves of unpublished and usually unsubmitted manuscripts. Most of it was nonfantasy, and most of it written from the viewpoint of a psychiatrist.

He was early among psychiatrists in an American mental institution to attempt to employ Freudian theories in an effort to cure his patients. "This revolutionary work deeply interested me and I read everything obtainable pertaining to it," he wrote in Through the Back Door *(Life with the Abnormals)*, a 125,000-word inside story on the working of mental institutions completed in 1941 and circulated only in manuscript. "To me there seemed to be something momentous of great and far-reaching consequences," he continued, "in Freud's explanations of abnormal conduct and his thought that many peculiar and unhappy patients actually could be cured if they could arrive at a better understanding of their subconscious memories. At that time our work was based entirely on (Emil) Kraepelin. But Kraepelin seemed only interested in symptoms, diagnosis and classification; he gave little help concerning treatment and rarely mentioned the possibility of a cure."

It was while actually working in institutions for the mentally ill that Dr. Keller wrote his science fiction and fantasies on psychiatric themes. He was involved in the environment of the abnormal most of his working hours and was a Freudian at a time when the theories were still not widely accepted. As a result he had virtually no competition in the science-fiction world and ironically exerted only a limited amount of influence, because there was literally no one capable of duplicating his themes or approach.

An excellent case in point is his story "The Tree of Evil" (*Wonder Stories,* September, 1934). After leaving Louisiana, Keller had taken a post in Bolivar, Tenn., and he used that community as the background for his story (involving Taine of San Francisco) of a town that gradually loses its sense of morality as a result of eating leaves from a very special tree.

"The Tree of Evil" was but a prelude for a short novel which Keller was to write, which may very well be the most remarkable single story based on psychiatry written in the science-fiction format. Before World War II, Keller had written half of a

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novel titled *The Abyss* and put it aside. Its only appearance was in hardcover from New Era Publishers, Philadelphia, 1948, under the title *The Solitary Hunters and The Abyss.* This was the sole book turned out by that firm, organized by two Philadelphia science-fiction enthusiasts Robert A. Madle and Jack Agnew, during a period when specialty book publishing houses for science fiction and fantasy were common. In this novel, a chemical is discovered by a scientist in the bodies of the insane which appears to be a major cause of abnormality. He synthesizes this chemical so it will temporarily produce the same symptoms in "normal" human beings. "The threshold of consciousness will be lowered by the use of this drug," called the XYZ drug. The drug is included in chewing gum; and, by absorbing it, the user throws off 2,000 years of superficial culture and philosophy and assumes behavior patterns similar to those of the days of Rome.

The population of New York City is subjected to this "madness" for thirty days. The accounts of the rise of cultism in Harlem and the attitude of the Negroes towards the white race are little short of brilliant. It could very well be a story of today's headlines. Most engaging is the feeling of authenticity, as though each incident described had a tiny number alongside it referring the reader to a title in a bibliography of psychiatric case histories. The preciseness with which Keller drives home his argument that there is a *physical* as well as a *mental* cause of abnormal behavior shows a man who, despite his admiration of psychoanalysis, came to realize that Freud had only part of the answer. The parallel between Keller's chemical and LSD is too obvious to elaborate upon.

When Keller stopped appearing regularly in the science-fiction magazines, there was no one qualified to pick up where he left off. The appearance of *The Abyss* sometime later, with a sale of probably no more than 1,000 to a few collectors, had too limited a distribution among science-fiction authors to have influenced them.

As early as 1939, one writer had plunged into a psychiatric theme with such power that it clearly foreshadowed the success that was later to be his, when he made a specialty of such subjects for stories of psychological terror. That author was Robert Black, who wrote "The Strange Flight of Richard Clayton" (*Amazing Stories,* March, 1939). The first man alone on a flight to Mars loses his time sense. He experiences a series of adventurous and horror-packed dreams, until even waking, he has increasing difficulty telling fantasy from reality. He has no idea of how much time is passing, but knows it must be great since he is distinctly aging. Finally, the ship lands, and he staggers forth to die of old age, though he has been in the ship only one week, and due to a malfunction it has never left the ground!

The magazine that began to point the way to psychiatry as a source of plot ideas for science fiction was not a science-fiction magazine in any

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true sense. It was a publication called *Unknown,* edited by John W. Campbell, editor of *Astounding Science Fiction,* and devoted to the proposition of fairy tales for grown-ups. Plots were drawn from legend, myth, superstition, religion, witchcraft, spiritualism and Forteanism; and there were few stories that a trained psychiatrist could not have related to a true human abberation. Robert A. Heinlein contributed on outstanding short effort called "They" (*Unknown,* April, 1941), about a man held under observation because he believes everything about him is a gigantic plot. It turns out to be just that, his entire world being a series of props and facades for no reason that he can determine.

This bent achieved its epitome in a psychological fantasy by L. Ron Hubbard titled "Fear" (*Unknown,* July, 1940). This short novel carries its lead character through a surrealistic nightmare as he attempts to recapture four lost hours from his memory, culminating in the discovery that he had murdered his wife during that period.

Hubbard was himself imbued with an interest in psychiatry that reflected itself in the movement of Dianetics which he sponsored in 1950. His bestselling book *Dianetics: The Modern Science of Mental Health* (Hermitage House, 1950) presented a number of racy, couch case histories. A follow-up book on the subject *Science of Survival* by L. Ron Hubbard (The Wichita Publishing Company, Wichita, Kans., 1951) outlined techniques for "auditing" a Dianetics patient, which differed scarcely at all with the popular view of psychoanalysis. Considering that a long article "Dianetics: The Modern Science of Mental Healing" by L. Ron Hubbard preceded the book in the May, 1950, issue of *Astounding Science Fiction,* plots involving mental problems might quite reasonably be expected to receive more space in science-fiction periodicals.

There had been a movement in this direction for some years. Frequently such implications were found in Henry Kuttner's stories. Particularly effective was "Shock" (*Astounding Science-Fiction,* March 1943), where a man from the future develops into an insane genius who has been taking shock treatments in his own time.

Kuttner's effort was extremely direct, without nuance. By contrast, Clifford D. Simak's "Huddling Place" (*Astounding Science Fiction,* July, 1944), the second in his famed "City" series, was a sophisticated and delicately subtle telling of a surgeon from Earth, asked to go to Mars to save the life of a close friend, who was on the verge of giving a philosophy to mankind that will set it ahead a hundred thousand years. For generations Earth has been decentralizing, and homes have become completely self-contained. Because of this the surgeon has developed agoraphobia, making him incapable of leaving, even to save a friend's life and a priceless philosophy.

A British author, writing under the name of Peter Phillips, gained a reputation with his first science-

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fiction sale "Dreams Are Sacred." (*Astounding Science Fiction* September, 1948) by directing the consciousness of his protagonist into the dream world of an insane science-fiction writer. The hero introduces so many extraneous factors into the dream that he destroys the pattern and forces a return to normalcy. It can be seen that "Dreams are Sacred" preceded "The Jet Propelled Couch" with a fundamentally similar idea.

The willingness of *Astounding Science Fiction* to repeatedly include material in a psychiatric vein whenever the use enhanced the story was underscored in "The Strange Case of John Kingman" by Murray Leinster (May, 1948), where it is discovered that a man has been held in a mental institution for 162 years; and modern tests determine that he is an alien from outer space, but nevertheless actually paranoiac. An attempt to cure him results in his reversion to infantilism.

The author who made the most effective use of the psychiatric, between the dominance of David H. Keller, M.D., and the emergence of *Galaxy Science Fiction,* was Ray Bradbury. After years of effort, Bradbury had developed his stylistic facility to the point where the barriers of the big slick magazines were rapidly being hurdled. This same poetically dramatic style had gained him a reputation in science fiction, augmented by slightly off-beat themes and, finally, a turn of the plot that hinged on psychological twists.

He made a major, but largely ignored use of hallucination on the part of an Earthman landed on Mars in "Defense Mech" (*Planet Stories,* Spring, 1946) who imagines that he is viewing a variety of Earth tableaux on that planet. When he altered the idea slightly to have an entire crew of a spaceship in "Mars is Heaven" (*Planet Stories,* Fall, 1948) experience similar but more elaborate hallucinations, he produced a story which became one of the true pillars of his success.

The question has been asked whether or not Bradbury was conscious of the frequency of psychological themes in his work. The answer is that a writer may accidentally turn out a tale of psychiatric implications on occasion; but when a considerable share of his major successes is concerned with abnormal psychology in a futuristic setting, it is fair to say that the author understand various aspects of the subject and unquestionably is artfully utilizing this knowledge to write a successful story.

The science-fiction editor who was actually most fascinated by psychiatric themes in science fiction and most actively encouraged their writing and promoted the popularity of such stories was Horace L. Gold, upon the introduction of his *Galaxy Science Fiction* in October, 1950. Gold had written science fiction for *Astounding Stories* as far back as 1934 under the pen name of Clyde Crane Campbell. He had for a period before his entry into the armed services in World War II worked as an editor for Standard

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Magazines, publisher of *Thrilling Wonder Stories* and *Startling Stories*, and had sold fiction to *Unknown* magazine.

Certain of his authors displayed a definite aptitude for this type of fiction. Richard Matheson, with "The Waker Dreams" (*Galaxy Science Fiction*, December, 1950), tells an effective story of how future man, believing he has been relieved of all work through automation, is mentally confused into performing scores of essential but minor tasks to keep his world functioning. Matheson repeats the theme again with singular effectiveness in "Lover When You're Near Me" (*Galaxy Science Fiction*, May, 1952), where a station keeper on a distant planet battles agonizingly, but unsuccessfully, to prevent what appears to be either telepathic seduction or a special form of psychosis leading to that impression, induced by the presence of an abhorrent humanoid female of that world.

Theodore Sturgeon, too, found the story of psychiatry his cup of tea. His "Baby is Three" (*Galaxy Science Fiction*, October, 1952), the novelette which formed the basis of his great classic *More Than Human*, literally starts and ends in the psychiatrist's office. The psychiatrist draws out the incredible revelation that the patient, a youth, is part of a gestalt organism, acting as the central teen-age control of a number of humans functioning in telepathic concert. "Baby is Three," through Sturgeon's ingenuity, lifted itself out of the psychiatrist's couch to achieve the distinction of being the best story on gestalt psychology to appear in science fiction up to that time. It appears to have been inspired by "In Hiding," a moving and sensitive story by Wilmar Shiras (*Astounding Science Fiction*, November, 1948) of a child of genius level attempting to keep his special abilities from the insistent probings of a psychiatrist.

Sturgeon seemed, to enjoy playing with abnormal psychology as much as did Gold, and it was to become a powerful element in a good many of his stories. Certainly his most intensive use of the psychiatric was in "Who?" (*Galaxy Science Fiction*, March, 1955); where a lone space traveler imagines he is talking to someone behind the bulkhead of his spaceship on a long space journey, only to learn that a device has been planted in his brain to keep him in communication with the child within himself. As intensively psychiatric was Sturgeon's "The Other Man" (*Galaxy Science Fiction*, September, 1956), where a man's alter ego and ego, which have been battling for ascendency and causing erratic patterns of behavior, are modulated electronically so that a both personalities blend into a harmonious whole.

It can be seen that, despite the spaceships and gadgetry, like the Psychostat in "The Other Man," for taking a human personality apart and putting it back together again, the basic premise of *all* three of Sturgeon's stories is the theme of "possession." This theme is almost as old as mankind; it is the basis of the

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first and greatest psychiatric science-fiction story, *Strange Case of Dr. Jekyll and Mr. Hyde,* and it has been most basically exemplified in *The Dybbuk* by S. Ankski, generally considered to be the finest of all plays written first in the Yaddish language.

A substantial portion of the tales of the psychiatric in science fiction published since the onset of *Galaxy Science Fiction* boils down to little more than variations on the theme of possession. "Silent Brother" by Algis Budrys, writing as Paul Janvier (*Astounding Science Fiction,* February, 1956), utilizes symbiotic intelligences from Alpha Centauri to offer man guidance; "Strange Compulsion" (*Science-Fiction Plus,* December, 1953) by Philip Jose Farmer is essentially a story of physical possession by a parasite, resulting in actions on the part of its host which are seemingly irrational and anti-social; indirect possession is found in "The Dreaming Wall" by Gerald Pearce (*Galaxy Science Fiction,* May, 1955) which tells of a city on Fallon's planet, where the night is punctuated by people screaming in nightmares, as strange dreams and stranger thoughts encroach into their slumber. The problem is solved when an ancient wall surrounding the city is determined to be interpenetrated with a mindless life form, which receives, stores and transmits telepathetically all thoughts emanating in its area.

It is worthy of noting that when an actual psychiatrist, such as David H. Keller, M.D., wrote a broad spectrum of science fiction based on his specialty, possession as a theme was rare probably because he knew so many other fascinating deviations to base his speculations upon. With the dilettante it is common for his knowledge of psychiatry to be too limited to make him aware of the recurrent plot trap.

Since 1950, the quantity of science fiction on psychiatric themes has grown so vast as to provide a fertile field for a scholarly volume. Such a volume might be of particular interest if it were written by, or in collaboration with, a psychiatrist.

Psychiatric stories have been written with the intensity of "Hallucination Orbit" by J. T. McIntosh (*Galaxy Science Fiction,* January, 1952) or "The Yellow Pill" by Rog Phillips (*Astounding Science Fiction,* October, 1958), wherein every word is devoted to the subject's problem, and a guessing game ensues between the reader and the lead character, as to what elements are real and which are psychiatric syndromes.

Inevitably, there have also been stories where the psychiatric element was presented tongue in cheek. "Something Green" by Fredric Brown (*Space on My Hands,* Shasta, 1951) was a delightful wink of the eye, telling of a stranded spaceman who for 30 years has searched a red planet for a downed spacecraft. The only green he ever sees is the beam of his almost inexhaustible ray gun, when used for killing a wild beast. When finally rescue arrives, he learns Earth has been destroyed and that green is the natural color of no other world. He destroys his rescuer and retreats again into his hunt fan-

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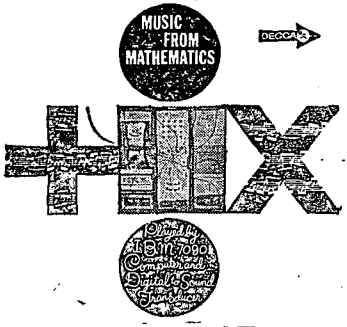

MUSIC OF TOMORROW

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tasy, happily blasting his green ray. Henry Kuttner, teaming up with his wife C. L. Moore in "A Wild Surmise" (*Star Science-Fiction Stories*, edited by Fred Pohl, Ballantine Books, 1953) also utilized "possession" as a theme and had a human and a Martian psychiatrist change bodies through a subject who imagines he lives on both worlds. However, it was Robert Bloch who really tried to wrap it all up in "Dead-End Doctor" (*Galaxy Science Fiction*, February, 1956), where the last psychiatrist on Earth fights a losing battle to hold his business against gland serums which compensate for almost all mental ills. He finally starts a new career in the treatment of mental problems of robots, performing the first successful "prefrontal robotomy."

It is an easy and a natural thing to laugh at a substantial part of the stories involving psychiatric problems which appear so frequently in science fiction, particularly since so many of them are written by authors who are playing their psychiatry by ear. Yet the record clearly shows that the benefits to science fiction have been more on the plus than on the minus side. Psychoanalysis plays an increasing role not only in our lives, but in our literature. Adding this element to science fiction has brought the field in line with the general trend and incontestably contributed some superior stories to the roster. END

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THE PLANET WRECKERS

by KEITH LAUMER

Illustrated by MORROW

He went to bed an ordinary mortal and awoke a movie star. But the trouble was, the price was his life!

I

In his shabby room in the formerly elegant hostelry known as the Grand Atumpquah Palace, Jack Waverly pulled the corrse weave sheet up about his ears and composed himself for sleep.

Somewhere, a voice whispered. Somewhere, boards creaked. Wind muttered around the loosely fitted window, rattling it in its frame. The pulled-down blind clacked restlessly. In the room above, footsteps went three paces; clank; back three paces; clank . . . .

Drat the fellow, Waverly thought. *Why doesn't he stop rattling his chains and go to bed?* He turned on his other side, rearranged the pillow of the consistency of bagged sawdust. Beyond the partition, someone

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was whistling a strange, unmelodic tune. It was hot in the room. The sheet chafed his neck. Next door, voices muttered with a note of urgency. Waverly made out the words *magma* and *San Andreas fault*.

"Geology, at ten minutes past midnight?" he inquired of the mottled wallpaper. Above, bedsprings squeaked faintly. Waverly sat up, frowning at the ceiling. "I thought the clerk said he was putting me on the top floor," he said accusingly. He reached for the telephone on the bedside table. A wavering dial tone went on for five seconds, then cut off with a sharp click.

"Hello?" Waverly said. "Hello?"

The receiver was dead against his ear.

"If this weren't the only hotel in town," Waverly muttered.

He climbed out of bed, went to the high window, raised the roller shade, looked out on a view of a brick wall ten feet away. From the window next door, a pattern of light and shadow gleamed against the masonry.

Two silhouettes moved. One was tall, lean, long-armed, like a giant bird with a crested head and curious wattles below a stunted beak. The other resembled an inverted polyp, waving a dozen arms tipped with multifingered hands, several of which clutched smoking cigars.

"Trick of the light," Waverly said firmly. He closed his eyes and shook his head to dispel the illusion. When he looked again, the window was dark.

"There, you see?" He raised the sash and thrust his head out. Moonlight gleamed on a bricked alley far below. A rusted fire escape led upward toward the roof. Leaning far out, Waverly saw the sill of the window above.

"No lights up there," he advised himself. "Hmmmm."

Faintly, he heard a dull rattle of metal, followed by a lugubrious groan.

"True, it's none of your business," he said. "But inasmuch as you can't sleep anyway . . ." Waverly swung his legs over the sill onto the landing and started up.

As he reached the landing above, something white fluttered out at him. Waverly shied, then saw that it was a curtain, billowing out from an open window. Abruptly, a feminine sob sounded from within. He poked his head up far enough to peer over the window sill into darkness.

"Is, ah, something the matter?" he called softly. There was a long moment of silence.

"Who's there?" a dulcet female voice whispered.

"Waverly, madam, Jack Waverly. If I can be of any help?"

"Are you with the Service?"

"I'm with ISLC," Waverly said. He pronounced it as a word, "islick". "That's International Sa —"

"Listen to me, Wivery," the voice was urgent. "Whatever he's paying you, I'll double it! And you'll find the Service not ungrateful."

"No payment is necessary for aid to damsels in distress," Waverly returned. "Er, may I come in?"

"Of course! Hurry up, before one

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of those slimy Gimps steps out for a stroll up the wall and sees you!"

Waverly climbed quickly in through the window. The room, he saw, was a mere garret, cramped under a low ceiling. It appeared to contain no furniture other than a dimly seen cot against one wall. A vague form moved a willowy arm there. Waverly moved toward it.

"You don't have a molecular disassociator with you?" the melodious voice queried urgently. "There's not much time left."

"Ah . . . no, I'm afraid not. I —"

"They mean to strap me to my own twifler, set the warperators at two and a half busters and aim me toward Neptune," the feminine voice went on breathlessly. "Can you imagine anything more brutal?"

Waverly groped forward. "Now, now, my dear. Don't be upset."

As he reached the cot, his hand fell on stout links looped around the foot rail.

He fumbled, encountered the blocky shape of a hefty padlock.

"Good lord! I thought — that is, I didn't actually think —"

"That's right. Chained to the bed," there was a slight quaver in the voice.

"B-but — this is preposterous! It's criminal!"

"It's an indication of their desperation, Wivery! They've gone so far now that nothing short of the most drastic measures can stop them!"

"I think this is a matter for the authorities," Waverly blurted. "I'll put a call through immediately!"

"How? You can't get through."

"That's right; I'd forgotten about the phone."

"And anyway — I *am* the authorities," the soft voice said in a tone of utter discouragement.

"You? A mere slip of a girl?" Waverly's hand touched something cool, with a texture like nubbly nylon carpeting.

"I weighed three hundred and seventy pounds, Earth equatorial," the voice came back sharply. "And we Vorplischers happen to be a matriarchal society!"

A pale shape stirred, rose up from the rumpled bedding. A head the size of a washtub smiled a footwide smile that was disconcertingly located above a pair of limpid brown eyes. A hand which appeared to be equipped with at least nine fingers reached up to pat a spongy mass of orange fibers matted across the top of the wide face. Waverly broke his paralysis sufficiently to utter a sharp yelp.

"Shhh!" the sweet voice issued from a point high in the chest. "I appreciate your admiration, but we don't want those monsters to hear you!"

II

"From Berj, Detective Third Class, at your service," the creature soothed Waverly. "I'm not supposed to reveal my identity, but under the circumstances I think it's only appropriate."

"D — delighted," Waverly choked. "Pardon my falling down. It's just that I was a trifle startled at your, ah, unusual appearance."

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"It's perfectly understandable. A neat disguise, don't you think? I made it myself."

Waverly gulped. "Disguise?"

"Of course. You don't think this is my natural look, do you?"

Waverly laughed shakily. "I must confess that what with all this creeping around in the dark, I *was* ready to leap to conclusions." He peered at the massive form, more clearly visible now that his eyes accommodated to the dim light. "But what are you disguised as, if you don't mind my asking?"

"Why, as a native, of course. The same as you are, silly."

"As I am what?"

"Disguised as a native."

"Native of where?"

"Of this planet."

"Oh, of course." Waverly was backing toward the window. "Of this planet. A native . . . I take it you're from some *other* planet?"

The detective laughed a rippling laugh. "You have a jolly sense of humor, Wivery. As if a Vorplischer were native to this patch of wilderness."

"And the people who chained you up — are they from, ah, Vorplisch, too?" Waverly made conversation to cover his retreat.

"Don't be absurd. They're a mixed bag of Broogs, Limpicos, Erwalts, Glimps and Pud knows what-all." Fom Berj rattled her manacles. "We'd better do something about these chains in a hurry," she added briskly.

As Waverly reached the window, an eerie, purplish glow sprang up outside, accompanied by a shrill warbling. Waverly retreated hastily.

"I think that's them arriving with my twifler now," Fom Berj said tensely. "It's a brand new model, equipped with the latest in antiac gear and the new infinite capacity particle ingesters. You can imagine what *that* means! My frozen corpse will be three parsecs beyond Pluto before my Mayday beep clears the first boost station."

"Frozen corpse? Pluto?" Waverly gobbled.

"I know it sounds fantastic, but disposing of an agent of the Service is a mere bagatelle to these operators, compared with what they're planning!"

"What *are* they planning?" Waverly choked.

"Don't you know? I thought you were working for Izlik."

"Well, he, ah, doesn't tell us much. . . . "

"Mmmm. I don't know about that Izlik. Sometimes I wonder just how deep a game he's playing. By the way, where *is* he?"

"He was delayed by a heavy cloud cover over Ypsilanti," Waverly improvised. "He'll be along later." His eyes roved the room, searching for an escape route. "You were saying?" he prompted in an obscure instinct to keep the detective talking.

"They're making a Galacular," Fom Berj said solemnly.

"A . . . Galacular?"

"Now you see the extent of their madness. An open violation of Regulation 69723468b!"

There was a sharp series of bumping sounds above. "Better hurry with

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that molecular disassociator," Fom Berj said.

"What's a Galacular?" Waverly was close to the door now. He froze as something made a slithery sound beyond it.

"A multi-D thriller," From Berj was explaining. "You know, one of those planetary debacle epics."

"What sort of debacle?" Waverly recoiled at a sound as of heavy breathing outside the door.

"Floods, quakes, typhoons — you know the sort of thing. Audiences love them, in spite of their illegality. The first scene they're shooting tonight will be a full scale meteor strike in a place called Montana."

"You mean — a *real* meteor?"

"Of course. According to my informant, they've grappled onto a cubic mile or so of nickel-iron that was parked in a convenient orbit a few million miles out, and nudged it in this direction. I would have stopped it there, of course, but I blundered and they caught me," the detective sighed. "It should make quite an effective splash when it hits."

"They're going to wreck an entire state just for a — a spectacle?" Waverly choked.

"I see you're not familiar with the Galacular craze. To be accepted by discriminating multi-D fans, nothing less than a genuine disaster will serve."

Up above on the roof, heavy feet clumped; something massive bump-bumped.

Fom Berj's voice was icy calm. "Now, Wivery, it's true we Vorplischers pride ourselves on our coolness in the face of peril, but WILL YOU GET THESE DAMNED CHAINS OFF ME BEFORE IT'S TOO LATE!"

Waverly darted to the window. "Don't go away," he called over his shoulder. "I'll be right back!"

It took Waverly forty-five seconds to descend to his room, snatch up his sample case, hastily examine his tongue in the mirror and retrace his steps to the attic. He opened the case, lettered International Safe and Lock Corporation, took out a tool shaped like a miniature crochet hook, turned to the lock.

"Hmmm. A variation on the Katzenburger-McIlhenney patents," he muttered. "Child's play . . ." He probed delicately in the wide key slot, frowning as he worked.

"Hurry, Wivery!" Fom Berj cried.

Waverly wiped perspiration from his forehead. "It's trickier than it looked," he said defensively. "Apparently they've employed a double-reverse cam action."

Feet clumped on stairs, descending from the roof. A mutter of hoarse voices sounded in the hall, just beyond the door. The latch rattled. Waverly reached for his sample case, rummaged among the odds and ends there, came up with a cylindrical object. He sprang to the door, hastily engaged the chain latch just as the doorknob turned cautiously. The door creaked, swung open two inches, came to rest against the chain. A beaklike nose appeared at the opening, followed by a hand holding a gun.

Aiming coolly, Waverly directed a jet of menthol shaving cream at a

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pair of close-set eyes just visible above the nose. They withdrew with a muffled shriek. The gun clattered on the floor. Waverly snatched up the weapon, jammed it in his waistband, dashed back to the lock. Five seconds later, it opened with a decisive *spongg!* Fob Berj emitted a delighted squeak, rolled off the bed as the chains clattered to the floor. Waverly gaped at the cluster of supple members on which the bulky detective rippled swiftly across to the window. Outside the door, excited twitters, burbles and growls sounded interrogatory notes. The doorknob rattled. Something heavy struck the door.

"To the roof!" Fom Berj flowed through the window and was gone. The door shook to a thunderous impact. Waverly sprang to the window. On the landing, he looked down. A round, pale face with eyes like bubbles in hot tar stared up at him. He yelped and dashed for the roof.

Pulling himself up over the parapet. Waverly looked across an expanse of starlit roof, at the center of which an object shaped like a twelve-foot gravy boat rested lightly on three spidery jacks. The upper half was a clear plastic, hinged open like a mussel shell. Fom Berj was halfway to it when a small, sharp-featured head appeared over its gunwale. The monkeylike face split vertically, emitted a sharp cry, and dived over the side. The boat rocked perilously as Fom Berj swarmed up and in; she turned, extended a long, three-elbowed arm to Waverly, hauled him up as something popped nearby. Pale chartreuse gas swirled about the canopy as it slammed down. The detective lurched to a small, green-plush-covered contour seat, groped for the controls. Waverly scrambled after her, found himself crowded into a restricted space which was apparently intended as a parcel shelf.

"Which way is Montana?" the detective inquired over a rising hum that sprang up as she poked buttons on the padded dash.

"Straight ahead, about a thousand miles," Waverly called.

"Hold on tight," Fom Berj cried as the little vehicle leaped straight up. "On optimum trajectory, the trip will take close to half an hour. I don't know if we'll be in time or not."

III

Level at 100,000 feet, the twifler hummed along smoothly, making the whispering sound which gave it its name. Its velocity was just under 1850 MPH.

"Hurry," Waverly urged.

"Any faster at this altitude and we'd ablate," Fom Berj pointed out. "Relax, Wivery. We're doing our best."

"How can I relax?" Waverly complained. "The headroom is grossly inadequate."

"Well, you know the Q-stress engine produces a lens-shaped field with a minor radius proportional to the reciprocal of the fourth power of the input. To give you room to stand up, we'd need a diameter of about half a light-year. That's unwieldy."

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"Hmmm. I wondered why flying saucers were shaped like that. It never occurred —"

"It seems to me you're pretty ignorant of a lot of things," Fom Berj studied Waverly with one eye, keeping the other firmly fixed on the instrument panel.

"I seem to note certain deficiencies in your costume, when it comes to that," he pointed out somewhat acidly. He eyed the three padded foundation garments strapped around the bulbous torso. "Most local beauties consider two of *those* sufficient," he added.

"You don't know much about these locals. They're mammary-happy. And if two of a given organ are attractive, six are triply attractive."

"What are you trying to attract?"

"Nothing. But a girl likes to make a good impression."

"Speaking of impressions — what are you planning on doing about this meteorite? You *did* say a cubic mile?"

"I was hoping to disintegrate it outside the outer R-belt, if possible, but I'm afraid we're running a little late."

"A thing that size —" Waverly felt the sweat pop on his forehead — "will vaporize the crust of the earth for miles around the point of impact!"

"I hate to think of what it will do to the native wild life," Fom Berj said. "Their feeding and mating habits will be upset, their nests destroyed —" Fom Berj broke off. "Oh, dear, I'm afraid we're too late!"

Ahead, a glowing point had appeared high in the sky. It descended steadily, becoming rapidly brighter. Waverly braced his feet as the twifler decelerated sharply, veering off. The glaring point of fire was surrounded by a greenish aurora.

"It's about three hundred miles out, I'd say," Fom Berj commented. "That means it will strike in about thirty seconds."

A faint, fiery trail was visible now behind the new star. Through the clear plastic hatch, Waverly watched as a beam of blue light speared out from the swelling central fire, probed downward, boiling away a low cloud layer.

"What's that?" Waverly squeaked.

"A column of compressed gases. It will be splashing up a nice pit for the actual body to bury itself in."

A pink glow had sprung up from the surface far below. The approaching meteor was an intolerable point of brilliance now, illuminating the clouds like a full moon. The light grew brighter; now Waverly could see a visible diameter, heading the streaming tail of fire. Abruptly it separated into three separate fragments, which continued on parallel courses.

"Tsk," Fom Berj clucked. "It exploded. That means an even wider distribution . . ."

With appalling swiftness the three radiant bodies expanded to form a huge, irregular glob of brilliance, dropping swiftly now, darting downward as quick as thought —

The sky opened into a great fan of yellow light more vivid than the sun.

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Waverly squinted at the actinic display, watched it spread outward, shot through with rising jets of glowing stuff, interspersed with rocket-like streaks that punched upward, higher, higher, and were gone from view — all in utter silence. The far horizons were touched with light now. Then, slowly, the glare faded back. The silver-etched edges of the clouds dimmed away, until only a great rosy glow in the west marked the point of the meteorite's impact.

"Fooey," Fom Berj said. "Round one to the opposition."

Waverly and the Vorplischer stared down at the milewide, white-hot pit bubbling fifty thousand feet below and ten miles ahead.

"You have to confess the rascals got some remarkable footage that time," Fom Berj commented.

"This is incredible!" Waverly groaned. "You people — however you are — were aware that this band of desperadoes planned this atrocity — and all you sent was one female to combat them?"

"I'll disregard the chauvinistic overtones of that remark," Fom Berj said severely, "and merely remind you that the Service is a small one, operating on a perennially meager appropriation."

"If your precious Service were any sort of interplanetary police force, it wouldn't tolerate this sort of sloppy work," Waverly said sharply.

"Police force? Where did you get an idea like that? I'm a private eye in the employ of the Game and Wildlife Service."

"Wildlife —" Waverly started.

"Brace yourself," Fom Berj said. "Here comes the shock wave."

The twifler gave a preliminary shudder, then wrenched itself violently end-for-end, at the same time slamming violently upward, to the accompaniment of a great metallic *zonnggg!* of thunder.

"I shudder to imagine how that would have felt without the special antiac equipment," the detective gasped. "Now, if we expect to intercept these scoundrels in the act of shooting their next scene, there's no time to waste."

"You mean they're going to do it *again?*"

"Not the same routine, of course. This time they're staging a major earthquake in a province called California. They'll trigger it by beaming the deep substrata with tight-focus tractor probes. The whole area is in a delicate state of balance, so all it will take is the merest touch to start a crustal readjustment that will satisfy the most exacting fans."

"The San Andreas Fault," Waverly groaned. "Good-by, San Francisco!"

"It's the Sequoias I'm thinking of," Fom Berj sighed. Remarkable organisms, and not nearly so easy to replace as San Franciscans."

IV

The twifler hurtled across the Rockies at eighty thousand feet, began a let-down over northwestern Nevada, an unbroken desert gleaming ghostly white in the light of a crescent moon. Far ahead, San Francisco glowed on the horizon.

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"This gets a trifle tricky now," Fom Berj said. "The recording units will be orbiting the scene of the action at a substratospheric level, of course, catching it all with wide-spectrum senceivers, but the production crew will be on the ground, controlling the action. They're the ones we're after. And in order to capture these malefactors red-handed, we'll have to land and go in on foot for the pinch. That means leaving the protection of the twifler's antiac field."

"What will we do when we find them?"

"I'd prefer to merely lay them by the heels with a liberal application of stun gas. If they're alive to stand trial, the publicity will be a real bonus, careerwise. However, it may be necessary to vaporize them."

Decelerating sharply, Fon Berj dropped low over the desert, scanning the instruments closely.

"They've shielded their force bubble pretty well," she said. "But I think I've picked it up." She pointed. Waverly detected a vague bluish point glowing on a high rooftop near the north edge of the city. "A good position, with an excellent view of the target area."

Waverly held on as the flier swooped, low, whistled in a tight arc and settled in on a dark rooftop. The hatch popped up, admitted a gust of cool night air. Waverly and the detective advanced to the parapet. A hundred yards distant across a bottomless, black chasm, the blue glow of the fifty-foot force bubble shone eerily. Waverly was beginning to sweat inside his purple pajamas.

"What if they see us?" he hissed — and dropped flat as a beam of green light sizzled past his head from the bubble and burst into flame.

"Does that answer your question?" Fom Berj was crouched behind the parapet. "Well, there's no help for it. I'll have to use sterner measures." She broke off as the deck underfoot trembled, then rose in a series of jarring jerks, dropped a foot, thrust upward again. A low rumble had started up. Brick came pelting down from adjacent buildings to smash thunderously below.

"Oh, oh, it's started!" Fom Berj shrilled. Clinging to the roof with her multiple ambulatory members, the detective unlimbered a device resembling a small fire extinguisher, took aim and fired. Waverly, bouncing like a passenger in a Model T Ford, saw a yellow spear of light dart out, glance off the force bubble and send up a shower of sparks as it scored the blue-glowing sphere.

"Bull's-eye!" Fom Berj trilled. "A couple more like that, and —"

The whole mountainside under the building seemed to tilt. The parapet toppled and was gone. Waverly grabbed for a stout TV antenna, held on as his feet swung over the edge. Fom Berj emitted a sharp scream and grabbed for a handhold. The vaporizer slid past Waverly, went over the edge.

"That does it," the detective cried over the roar of crumbling mortar. "We tried, Wivery!"

"Look!" Waverly yelled. Over his shoulder, he saw the force bubble suddenly flicker violet, then green, then yellow — and abruptly dwindle

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to half its former diameter. Through a pall of dust, Waverly discerned the outlines of an elaborate apparatus resembling an oversized X-ray camera, now just outside the shrunken blue bubble. A pair of figures, one tall and thin, the other rotund and possessing four arms, dithered, scrabbling at the dome for entrance. One slipped and disappeared over the roof's edge with a mournful yowl. The other scampered off across the buckling roof, leaped to an adjacent one, disappeared in a cloud of smoke and dust.

"Did you see that?" Fom Berj cried. "They've had to abandon their grappler! We've beaten them!"

"Yes — but what about the earthquake?" Waverly called as the roof under him bounded and leaped.

"We'll just have to ride it out and hope for the best!"

Through the dust cloud, they watched as the blue bubble quivered, swam upward from its perch, leaving the abandoned tractor beamer perched forlornly on the roof.

"Let them go," Fom Berj called. "As soon as the ground stops shaking, we'll be after them."

Waverly looked out toward the vast sprawl of lights, which were now executing a slow, graceful shimmy. As he watched, a section of the city half a mile square went dark. A moment later, the twinkling orange lights of fires sprang up here and there across the darkened portion. Beyond the city, the surface of the Pacific heaved and boiled. A dome swelled up, burst; green water streamed back as a gout of black smoke belched upward in a roiling fire-shot cloud. The moonlight gleamed on a twenty-foot wavefront that traveled outward from the submarine eruption. Waverly saw it meet and merge with the waterfront, sweep grandly inland, foaming majestically about the bases of the hills on which the city was built. The long, undulating span of the Golden Gate bridge wavered in a slow snake dance, then descended silently into the bay, disappeared in a rising smother of white. More light went out; more fires appeared across the rapidly darkening city. A deafening rumble rolled continuously across the scene of devastation.

Now the backwash of the tidal wave was sweeping back out to sea, bearing with it a flotsam of bars, billboards, sea-food restaurants and automobiles, many of the latter with their headlights still on, gleaming murkily through the shallow waters. Smoke was forming a pall across the miles of darkened ruins, lit from beneath by leaping flames. Here and there the quick yellow flashes of explosions punctuated the general overcast.

"G-good Lord," Waverly gasped as the shaking under him subsided into a quiver and then was still. "What an incredible catastrophe!"

"That was nothing to what it would have been if they'd had time to give it a good push," Fom Berj commented.

"The fiends!" Waverly scrambled to his feet. "Some of the best bars in the country were down there!"

"It could have been worse."

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"I suppose so. At least the San Franciscans are used to it. Imagine what that tidal wave would have done to Manhattan!"

"Thanks for reminding me," Fom Berj said. "That's where the next scene is due to be shot."

V

"The scare we gave them should throw them far enough behind schedule to give us a decent crack at them this time," Fom Berj said, staring forward into the night as the twifler rocketed eastward. "They only have the one production unit here, you know. It's a shoestring operation, barely a hundred billion dollar budget."

Waverly, crouched again in his cramped perch behind the pilot, peered out as the lights of Chicago appeared ahead, spread below them and dwindled behind.

"What do they have in mind for New York? Another earthquake? A fire? Or maybe just a super typhoon?"

"Those minor disturbances won't do for this one," Fom Berj corrected him. "This is the climactic scene of the show. They plan to collapse a massive off-shore igneous dike and let the whole stretch of continental shelf from Boston to Cape Charles slide into the ocean."

"Saints preserve us!" Waverly cried.

"You should see what they'd do on a Class-A budget," Fom Berj retorted. "The local moon would look quite impressive, colliding with Earth."

"Ye gods! You sound almost as if you approve of these atrocities!"

"Well, I used to be a regular Saturday-afternoon theatergoer; but now that I've attained responsible age, I see the folly of wasting planets that way."

The blaze of lights that was the Atlantic seaboard swam over the horizon ahead, rushed toward the speeding twifler.

"They're set up on a barge about five miles offshore," the detective said as they swept over the city. "It's just a little field rig; it will only be used once of course." She leaned forward. "Ah, there it is now!"

Waverly gaped at a raft of lights visible on the sea ahead.

"Gad!" he cried. "The thing's the size of an Australian sheep ranch!"

"They need a certain area on which to set up the antenna arrays," Fom Berj said. "After all, they'll be handling a hundred billion megavolt-seconds of power. Now, we'll just stand off at about twenty miles and lob a few rounds into them. I concede it will be a little messy, what with the initial flash, the shock wave, the fallout and the storms and tidal waves, but it's better than letting them get away."

"Wait a minute — your cure sounds as bad as the disease! We're a couple of miles from the most densely populated section of the country! You'll annihilate thousands!"

"You really *are* hipped on conservation," Fom Berj said. "However, you can't cure tentacle mildew without trimming off a few tentacles. Here goes. . ."

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"No!" Waverly grabbed for the detective's long arm as the latter placed a spatulate finger on a large pink button. Taken by surprise, Fom Berj yanked the limb back, struck a lever with her elbow. At once, the canopy snapped up and was instantly ripped away by the hundred-mile-per-hour slipstream. Icy wind tore at Waverly's pajamas, shrieked past his face, sucked the air from his lungs. Fom Berj grabbed for the controls, fought the bucking twifler as it went into a spin, hurtling down toward the black surface of the sea.

"Wivery! I can't hold it! Vertigo! Take over . . . ." Waverly barely caught the words before the massive body of the feminine detective slumped and slid down under the dash. He reached, caught the wildly vibrating control tiller, put all his strength into hauling it back into line. The flier tilted, performed an outside lop followed by a snap-roll. Only Waverly's safety harness prevented him from being thrown from the cockpit. He shoved hard on the tiller, and the twifler went into a graceful inverted chandelle. Waverly looked "up," saw a vast spread of dark-glittering, white-capped ocean slowly tilting over him. With a convulsive wrench of the tiller he brought the Atlantic down and under his keel and was racing along fifty feet above the water. He dashed the wind-tears from his eyes, saw the lights of the barge rushing at him, gave a convulsive stab at four buttons at random and squeezed his eyes shut.

The twifler veered sharply, made a sound like ripped canvas and halted as suddenly as if it had dropped an anchor. Waverly pitched forward; the barness snapped. He hurtled across the short prow, clipping off a flagstaff bearing a triangular pink ensign, fell six feet and was skidding head over heels across the deck of the barge.

For a moment, Waverly lay half-stunned; then he staggered to his feet, holding a tattered strip of safety harness in one hand. The twifler was drifting rapidly away, some ten feet above the deck of the barge. He scrambled after it, made a despairing grab at a trailing harness strap, missed, skidded into the rail and clung there, watching the air car dwindle away downwind.

Behind him, a brilliant crimson spotlight blared into existence. Hoarse voices shouted. Other lights came up. The deck, Waverly saw, was swarming with excited figures. He ducked for the cover of a three-foot scupper, squinted as the floodlight caught him square in the face. Something hard was pressing into his hip. He groped, came out with the compact automatic he had jammed into the waistband of his pajamas. He raised the gun and fired a round into the big light. It emitted a deep-toned *whooff*, flashed green and blue and went out.

"Hey!" a rubbery voice yelled. "I thought you boobs stuck a fresh filament in number twelve!"

"Get them extra persons in position before I put 'em over the side," another voice bassooned.

"Zero minus six mini-units and counting," a hoot came from on high.

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The gobbling mob surged closer. Waverly clutched the pistol, made three yards sideways, then rose in shadow and darted toward a low deck house ahead. He rounded its corner, almost collided with an apparition with course-grained, blue wattles, two-inch eyes of a deep bottle green, a vertically hinged mouth opening on triple rows of coppery-brown fangs, all set on a snaky neck rising from a body like a baled buffalo robe shrouded in leathery wings; then he was skittering backward, making pushing motions with both hand.

"Hasrach opp irikik!" the creature boomed. "Who're youse? You scared the pants off me in that get-up! Whaddya want?"

"Izlik s-sent me," Waverly improvised.

"Oh, then you want to see the boss."

"Ah, yes, precisely. I want to see the boss."

"You want the feeding boss, the mating boss, the leisure-time boss, the honorary boss, the hereditary boss or the compulsory boss?" The monster snapped a blue cigar butt over the rail.

"The, er, boss boss!"

"Balvovats is inside, rescripting scene two. Din't you hear what happened out on the coast?"

"As a matter of fact, I just got in from Butte —"

"How did the fireball routine go?"

"Very impressive. Ah, by the way, how long before things get underway here?"

"Another five minutes."

"Thanks."

Waverly sidled past the horror, made for a lighted doorway fifty feet away. Above, invisible behind banked floodlights, someone was gabbling shrilly. Two beings appeared at the entrance as Waverly reached it. One was an armored creature mincing on six legs like a three-foot blue crab. The other appeared to be a seven-foot column of translucent yellow jelly.

"Here, you can't go in there," the crablike one barked. "*Ik urikik opsrock,* you know that!"

"Wait a minute, Sol," the gelatinous one burbled in a shaky voice like a failing tape recorder. "Can't you see he's just in from location? Look at the costume."

"A lousy job. Wouldn't fool anybody."

"What you got, Mac? Make it fast. Balvovats is ready to roll 'em."

"Ip orikip slunk," Waverly said desperately.

"Sorry, I don't savvy Glimp. Better talk local like the style boss said."

"It's the rotiple underplump!" Waverly barked. "Out of the way, before all is lost!"

"I got to have a word with Mel about his runners, which they're a little too uppity to suit me." Waverly caught the words as the two exchanged glances and moved from the doorway. He stepped through into a room dazzling with light and activity. Opposite him, a fifty-foot wall glittered with moving points of light. Before it, on high stools, half a dozen small orange-furred creatures bristling with multi-elbowed arms manipulated levers. On a raised dais to the left, a circular being with what

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appeared to be four heads shouted commands in all directions at once, through four megaphones.

"Okay!" Waverly heard the call. "We're all ready on one, three and four! What's the matter with two and five?"

"Here, you!" A scaled figure in a flowing pageboy bob thrust a sheaf of papers into his hand. "Take this to Blavovats; he's up in Central Mixing. If he likes it, he's got holes in his head!" Waverly gaped after the donor as it turned away. The noise around him made his ears ring. Everything was rushing toward a climax at an accelerating pace, and if he didn't do something fast . . .

"Stop!" he yelled at the room at large. "You can't do this thing!"

"It's a heart-breaker, ain't it, kid?" a bulging being on his left chirruped in his ear. "If I would have been directing this fiasco, I'd of went for a real effect by blasting the ice caps. Now, *there's* a spectacle for you! Floods, storms —"

"Here, take these to Balvovats!" Waverly shoved the papers toward a passing creature resembling a fallen pudding. The bulgy being nictated a membrane at him, snorted, said, "Okay, Okay, I'm going, ain't I?" and pushed off through the press. At a discreet distance, Waverly followed.

VI

The room the impressed messenger led him to was a circular arena crowded with screens, dials, levers, flashing lights, amid a cacophony of electronic hums and buzzes, all oriented toward a central podium on which was mounted a red and white, zebra-striped swivel chair, wide enough to accommodate triplets.

"Where's Balvovats?" The unwitting guide collared a jittery organism consisting of a cluster of bristly blue legs below a striped polo shirt.

"He stepped over to Esthetic Editing for a last-minute check," a piping voice snapped. "Now leggo my shirt before I call the shop steward!"

"Give him these!" The bulbous intruder handed over the papers and departed. Waverly faded back behind the column-mounted chair, looked around hastily, put a foot on a rung —

"Two minutes," a PA voice rang. "All recorder units on station and grinding."

"Hey, you, back outside on Set Nine! You heard the two-minute call!" Waverly looked down at a foot-high composition of varicolored warts mounted on two legs like coat-hanger wire.

"Mind your tone, my man," Waverly said. "Balvovats sent me. I'm sitting in for him. Is the, er, power on?"

"Cripes, what a time for a OJT! Okay, sir, better get on up there. About a minute and a half to M millisecond."

Waverly clambered to the seat, slid into it, looked over an array of levers, pedals, orifices, toggle switches and paired buttons with varicolored idiot lights. "Don't monkey with the board, it's all set up," the warty one whined at his elbow. "I balanced her out personal. All you

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got to do is throw the load to her when you get the flash the push-field is up to full Q."

"Naturally," Waverly said. "It wouldn't do at all to push, say, this little green button here . . .?"

"If you got to go, you should've went before you come in here. Better tighten up and wait. You only got fifty-one seconds and you're on the air."

"How about the big blue one there?"

"What for you want more light on deck? The boys are crying their eyes out now."

"This middle-sized yellow one?"

"The screens is already hot, can't you see 'em? Boy, the greenies they send out to me!"

"I know; this immense black lever is the one —"

"You don't need no filters, for Pud's sake! It's night time!"

Waverly ran both hands through his hair and then pointed to various levers in turn: "Eenie, meenie, minie, moe . . . ."

"Lay off that one you called 'minie,'" the instructor cautioned. "You touch that, you'll dump the whole load onto the left stabilizer complex —"

A door banged. Waverly looked up. A vast, white-robed being with arms like coiled boa constrictors had burst into the room, was goggling stem-mounted eyes like peeled tomatoes at Waverly.

"Hey — come down from there, you!" the new arrival bellowed. The snaky arms whipped up toward Waverly; he ducked, seized the forbidden lever, and slammed it home.

A shudder went through the seat under him; then the floor rose up like a stricken freighter up-ending for her last dive. A loud screech sounded in Waverly's ear as the warty being bounded into his lap and wrestled with the big lever. He rolled sideways, dived, saw the vast form of Balvovats cannon past and carom off the control pedestal, ophidioid members flailing murderously. Lights were flashing all around the room. A siren broke into a frantic, rising wail. Gongs gonged. Waverly, on the floor now and clinging to a cabinet support, saw an access panel pop open, exposing a foot square terminal block. "In for a penny, in for a pound," he muttered and grabbed a handful of the intricately color-coded leads and ripped them loose.

The resultant cascade of fire sent him reeling backward just as a baseball-bat-thick tentacle whipped down across the spot he had been occupying, with a dull *boom!* that rocked the deck plates under him. Smoke poured from the ruined circuitry. He tottered to his feet, saw Balvovats secure a grip on a stanchion nd haul his bulk upright.

"You!" the giant bellowed and launched itself at Waverly. He sprang for the door, tripped, rolled aside as the door banged wide. A gaggle of frantic spectaclemakers hurtled through, collided with the irate director. On all fours, Waverly pulled himself up the slanted deck and through the door.

In the corridor, the blare of gongs and sirens was redoubled. Buffeted by milling technicians, Waverly was

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spun, jostled, shoved, lifted along the passage and out onto the windswept deck. All around, loose gear was sliding and bounding down the thirty-degree slant. Waverly threw himself flat, barely avoiding a ricocheting cable drum, clawed his way toward the high edge of the barge.

"There he goes!" a bull-roar sounded behind him. He twisted, saw Balvovats winching himself upward in close pursuit. One extensible member lashed out, slapped the deck bare inches short of Waverly's foot. He groped for the automatic. It was gone. Ahead, a superstructure loomed up at the barge's edge, like a miniature Eiffel Tower. He scrambled for it, got a grip on a cross-member and pulled himself around to the far side. Balvovat's questing arm grabbed after him. He held on with both hands and one foot and delivered a swift kick to the persistent member; it recoiled, as a yell sounded from the darkness below. The deck lights had failed, leaving only the feeble gleam of colored rigging lights. Something struck the cross-bar by Waverly's head with a vicious *pwangg!* He clambered hastily higher.

On deck, someone had restored a spotlight to usefulness. The smoky beam probed upward, found Waverly's feet, jumped up to pin him against a girder fifty feet above the deck.

"A fat bonus to the one that nails him!" Balvovats's furious tones roared. At once, spitting sounds broke out below, accompanied by vivid flashes of pink light. Waverly scrambled higher. The spotlight followed him. Across the deck, a door burst open and smoke and flames rushed out. Waverly felt a shock through the steel tower, saw a gout of fire erupt through curled deck plating below.

"We're sinking!" a shrill voice keened.

"Get him!" Balvovats boomed.

Waverly looked down, saw white water breaking over the base of his perch. In the glow of the navigation lights, half a dozen small creatures were swarming up the openwork in hot pursuit. Something bumped him from behind. He shied, felt another bump, reached down and felt the hard contours of the automatic, trapped in the seat of his pajamas.

"Lucky I had them cut generously," he murmured as he retrieved the weapon. Something *spangled* beside him, and a near-miss whined off into the darkness. Waverly took aim, shot out the deck light. Something plucked at his sleeve. He looked, saw torn cloth. Below, a red-eyed ball of sticky-looking fur was taking a bead on him from a distance of ten feet. He brought the automatic up and fired, fired again at a second pursuer a yard below the leader. Both assailants dropped, hit with twin splashes in the darkness below.

"Decks awash," Waverly said to himself. *"Dulce et decorum est, pro patria, et cetera."*

Another explosion shook the stricken barge. The tower swayed. A shot whined past his face. Another struck nearby.

"Get him, troops! Get hiburble-burble . . . . " Balvovats's boom

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subsided. Waverly winced as a hot poker furrowed his shin. He saw a flicker of movement revealed by a blue rigging light, put a round into it, saw a dark body fall with a thin bleat. The spout of fire rising from the hatch on the high edge of the deck showed a white smother of foam that washed almost to the survivors clinging to the rail. A gun burped below, chipped paint by Waverly's hip. He shifted grips, leaned far out and placed a shot between a pair of overlapping, egg-white eyes. They fell away with a despairing wail.

Abruptly, the fire died with a hiss as a wave rolled entirely across the deck. Waverly felt the tower shake as a breaker thundered against it, bare yards below where he clung. The lower navigation lights gleamed up through green water now.

There was a whifling sound above. Waverly clutched his perch convulsively, looked upward.

"Fom Berj!" he yelled.

A dark ovoid shape settled down through the night toward him. He saw the cheery glow of running lights, the gleam reflected from a canopy.

"But . . . but our canopy blew away . . ." he faltered.

The twifler hove to, six feet above his head. A face like a plate of lasagna appeared over the edge. Squirmy hands, gripping an ominous-looking apparatus with a long barrel, came over the side, aimed at Waverly. A whirring sound started up. He brought up the pistol, squeezed the trigger —

There was an empty click.

"Superb!" the creature above exclaimed, extending a large grasping member over the side to Waverly. "What an expression of primitive savagery! Great footage, my boy! Now you'd better come aboard where we can talk contract in peace!"

VII

"I'm afraid I don't quite understand, Mr. Izlik," Waverly said dazedly, trying not to stare at the leathery-hided bulk draped in a Clan Stewart tartan, complete with sporran and Tam o'Shanter. "One moment I was teetering on top of a sinking tower, with a horde of furry atrocities snapping at my heels — and ten minutes later . . ." He looked wonderingly at the luxuriously appointed lounge in which he sat.

"I left my yacht anchored here at two hundred thousand feet and dropped down to spy out what Balvovats was up to," the entrepreneur explained. "I confess I wasn't above purloining a little free footage of whatever it was he was staging. Then I saw you, sir, in action, and presto! I perceived the New Wave in the moment of its creation! Of course, I secured only about three minutes' actual product. We'll have to pad it out with another hundred hours or so of the same sort of action. I can already visualize a sequence in which you find yourself pursued by flesh-eating Dinosaurs, scale a man-eating plant for safety and are attacked by flying fang-masters, make a leap across an abyss of flaming hydrocarbons and, in a single bound, attain the safety of your twifler, just

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as it collides with a mountain top!"

"Ah . . . I appreciated your offer of employment," Waverly interposed, "but I'm afraid I lack the dramatic gift."

"Oh, it won't be acting," Izlik handed over a slim glass of pale fluid and seated himself across from his guest. "No, indeed! I can assure you that all my productions are recorded on location, at the actual scenes of the frightful dangers they record. I'll see to it that the perils are real enough to inspire you to the highest efforts."

"No." Waverly drained his glass and hiccupped. "I appreciate the rescue and all that, but now I really must be getting back to work —"

"What salary are you drawing now?" Izlik demanded bluntly.

"Five hundred," Waverly said.

"Ha! I'll double that! One thousand Universal Credits!"

"How much is that in dollars?"

"You mean the local exchange?" Izlik removed a note book from his sporran, writhed his features at it.

"Coconuts . . . . wampum . . . . seashells . . . green stamps . . . ah! Here we are! Dollars. One Unicred is equal to twelve hundred and sixty-five dollars and twenty-three cents." He closed the book. "A cent is a type of cow, I believe. A few are always included in local transactions to placate Vishnu, or something."

"That's . . . that's a little over a million dollars a month!"

"A minute," Izlik corrected. "You'll get more for your next picture, of course."

"I'd like to take you up on it, Mr. Izlik," Waverly said wistfully. "But I'm afraid I wouldn't survive long enough to spend it."

"As to that, if you're to play superheroes, you'll naturally require superpowers. I'll fit you out with full S-P gear. Can't have my star suffering any damage, of course."

"S-P gear?"

"Self-Preservation. Developed in my own labs at Cosmic Productions. Better than anything issued to the armed forces. Genuine poly-steel muscles, invulnerable armor, IR and UV vision, cloak of invisibility — though of course you'll use the latter only in *real* emergencies."

"It sounds —" Waverly swallowed. "Quite overwhelming," he finished.

"Wait!" a faint voice sounded from the floor. Waverly and Izlik turned to the cot where Fom Berj was struggling feebly to sit up.

"You wouldn't . . . sink so low . . . as to ally yourself . . . with these vandals . . . ." she gasped out.

"Vandals!" Izlik snorted. "I remind you, madam, it was I who took in tow your derelict twifler, which was bearing you swiftly toward a trans-Plutonian orbit!"

"Better annihilation — than help . . . from the likes of you . . ."

"I, ah, think you have an erroneous impression," Waverly put in. "Mr. Izlik here doesn't produce Galaculars. In fact, he's planning a nice, family-type entertainment that will render the planet wreckers obsolete."

"The day of the Galacular is over!" Izlik stated in positive tones.

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"What is a mere fractured continent, when compared with a lone hero, fighting, for his life? When I release my epic of the struggle of one beleagured being, beset by a bewildering bestiary of bellicose berserkers, our fortunes will be made!"

"Oh, really?" Fom Berj listened to a brief outline of the probable impact on the theatrically minded Galactic public of the new Miniculars.

"Why, Wivery — I really think you've solved the problem!" she acknowledged at the end. "In fact — I don't suppose —" She rolled her oversized eyes at Isaac. "How about signing *me* on as leading lady?"

"Well — I don't know," Izlik hedged. "With a family-type audience, there might be cries of miscegenation . . . ."

"Nonsense. Take off your disguise, Wivery."

"To be perfectly candid, I'm not wearing one," Waverly replied with dignity.

"You mean —" Fom Berj stared at him. Then a titter broke from her capacious mouth. She reached up, fumbled at her throat, and with a single downward stroke, split her torso open like a banana peel. A slim arm came out and thrust the bulky costume back from rounded shoulders; a superb bosom emerged, followed by a piquant face with a turned-up nose topped by a cascade of carrot-red hair.

"And I thought I had to conceal my identity from *you!*" she said as she stepped from the collapsed Vorplischer suit. "And all this time you were really a Borundian!"

"A Borundian?" Waverly smiled dazedly at the graceful figure before him, modestly clad in a wisp of skintight gauze.

"Like me," Fom Berj said. "They'd never had hired me in my natural guise. We look too much like those Earth natives."

"Here," Izlik interrupted. "If you two are the same species, why is it that she's shaped like *that*, and you're not?"

"That's part of the beauty of being a, um, Borundian," Waverly said, taking the former detective's hand and looking into her smiling green eyes. "Go ahead and draw up the contracts, Mr. Izlik. You've got yourself a deal."

END

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SUN GRAZERS

by ROBERT S. RICHARDSON

How an astronomer spots comets — with one eye out for the cops!

To me the recent Comet Ikeya-Seki was a very exciting object. To most of the people I know it was a disappointment. I think the trouble is that without realizing it we have gotten into the habit of evaluating any spectacle, celestial or otherwise, in terms of TV, entertainment put on for our special benefit and hopeful approval. Also, Ikeya-Seki got too big a build-up: you could see it in full daylight; the Russians said it would hit the sun — would that mean the end of Earth, *etc., etc.?* But most people were unable to see the comet either day or night. It missed the sun and continued on its way with no repercussions on the Earth. And so Comet Ikeya-Seki was just another spectacular that fell on its face.

Comet Ikeya-Seki was moving in a parabolic orbit and hence will never return. But that does not necessarily mean we will never see a bright comet moving in its orbit again. I'm quite confident we shall. Not the *same* comet, of course, but a *different* comet moving in the *same* orbit.

Such comets are said to be members of a comet *group*. They should be carefully distinguished from the members of the comet "family," which is not the same thing at all. About 66 comet groups have been tentatively identified, of which there are 15 that are regarded as well established and designated by letters from A to Q. Comet Ikeya-Seki turned out to be a member of the M group, the famous sun-grazing comets, which is the largest of the lot with 8 and possibly 10 members at the latest count. To Group M belongs the "great" comet of 1882,

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THE MEMBERS OF THE M GROUP

Year and Name	Magnitude	Distance from center of sun at perihelion (A.U.)*	Distance from solar surface (miles)
1668	Bright	0.0666	5,760,000
1702 (?)	Faint	?	?
1843 I	Very bright	0.0055	79,000
1880 I	Much fainter	0.0055	79,000
1882 (?)	Faint	?	?
1882 II	Very bright	0.0077	283,000
1887 I	Much fainter	0.0097	469,000
1945 VII	Faint	0.0063	153,000
1963 e (Pereyra)	Faint	0.0053	60,000
1965 (Ikeya-Seki)	Very bright	0.00794501**	307,000

Maximum perihelion distance that will graze sun = 0.00464 A.U.

*1 A.U. = 93,000,000 miles, approximately.
** Orbit by L. E. Cunningham, University of California, Berkeley. Z. Sekanina, People's Observatory, Prague, gives for the perihelion distance, q = 0.0083.

probably the brightest of which we have an accurate record. The members of this group so far as known are listed in the table. Remember we could easily have missed some of the fainter ones. Information is not at hand for a few of the comets.

We see that despite what the newspapers said, several comets have approached the sun much closer than Ikeya-Seki. Although Comet Pereyra appears to hold the record at the moment, it was a faint object and never attracted much attention. These figures should not be taken as absolutely fixed and unalterable quantities, as their reliability can be no better than the accuracy of the observations upon which they are based. Yon can think of these comets as they come by as if they were different trains running on the same track and always in the same direction. It is impossible to buy a roundtrip ticket on this line. You stand at the station (Earth) watching the trains pass by and wondering how many more there are to come.

Confidential: Where to Look for a Comet

The tough part about comet hunting is that comets may show up anywhere. No region of the sky is safe from them. We know when and where to look for a periodic comet, especially if it is an old reliable like Encke's that has been discovered at 47 returns. Aside from the short-period comets, however, we have no way of knowing where the next new comet will appear.

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(For a working definition you can consider a "short-period" comet as one that returns in less than 200 years.)

Now we have no means of predicting when another member of the M Group will pay us a visit. Yet we already know the elements of its orbit: they will be the same as the orbital elements of 1882 II and Ikeya-Seki. Therefore this comet when it comes will approach the sun from the same general direction as the aphelia of these two bright comets in the northern part of Canis Major. This will be its approximate direction if *far away*.

Of course, when close it may be seen in almost any direction, depending upon where the Earth happens to be at the time. If you are a comet hunter it would not be a bad idea to sweep around in the neighborhood of the Big Dog and adjacent precincts whenever possible.

Comet Ikeya-Seki was magnitude 8 and within about 1 A.U. of the sun when picked up on 1965, Sept. 18.8 UT. — "object diffuse with central condensation or nucleus, and no tail." How it managed to escape until so near and bright is extraordinary. At discovery it was in Hydra about 30 degrees east of the aphelion position.

According to many reports it was a conspicious, naked-eye object on the afternoon of perihelion passage as viewed from stations in the southwestern United States. (But not the one in Altadena, California.)

The Origin of Comet Groups

How does a comet group originate?

A better question would be How does *any* comet originate? As for comet groups we can only suggest the following:

We know from direct observations that comets occasionally split apart. The classic example is Biela's comet, which in January, 1846, for reasons known only to itself, divided in two, the components continuing on their separate ways as complete and distinct comets. Biela's comet (or comets?) returned on schedule in 1852, although the distance between the pair had increased by a million miles. They passed out of observing range in September of that year and have never been seen since.

Consider a comet at the aphelion of its orbit situated at a moderate distance from the sun, say, 40,000 A.U.'s. Its period of revolution would be 2,828,430 years. This primitive comet gives birth, or if you prefer, undergoes disruption into a score of comets of various size. These apparently continue on side-by-side, the same as before. But not *quite* the same as before. For if the orbit of the comet is a large one, as we have postulated, the slightest change in velocity will produce a significant change in the length of the semi-major axis. Now the period of revolution depends only upon the semi-major axis. Suppose after disruption at aphelion one component is speeding along at 0.00827345 miles per second, which is about 3/10ths miles per hour in more familiar terms,

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while another component closeby received an increase in velocity of 1 per cent. For a short time, perhaps 10,000 years, the difference between them is scarcely noticeable. But gradually one begins to fall behind, to such an extent that it passes perihelion 12 years later than the other.

On the basis of the disruption hypothesis, therefore, a seemingly trivial difference in the velocities of the components of a comet would be amply sufficient to separate them by scores of years when they reach the vicinity of the sun. Yet all would file through the solar system in virtually identical orbits. Moreover, there is no difficulty in accounting for the numerous members of the M Group. We only need to assume a big enough comet!

But why should a body all alone, far out in the cold of space, spontaneously break apart? We don't know. But it is a good reason for giving each member of a comet group our closest attention.

A New Type of Planet Probe

Is there still a planet to be discovered beyond Pluto? We don't mean a few A.U.'s beyond Pluto, but thousands of A.U.'s beyond Pluto. There have been attempts to obtain evidence for the existence of such a body from information supplied by the long-period comets. To see how we might proceed we shall first consider a problem for which we already know the answer. Can the short-period comets furnish us with any evidence for the existence of a planet beyond Mars?

In comparing the distribution of the aphelion distances of 68 short-period comets, 42 of which have been seen at more than one appearance, the rest at one appearance only, the feature that stands out is the large population in the interval from 4.75 A.U. to 5.75 A.U. This interval includes only 25 per cent of the whole distance covered, yet contains 63 per cent of the total number of aphelia counted. The mean aphelion distance for these comets is at 5.25 A.U. The number of aphelia falling within the range is so high that we would certainly suspect the presence of Something there to have caused it.

As a matter of curiosity we might also plot the direction in space, or longitudes, of these aphelia. Longitudes between 150° and 270° are generally favored, with their mean at 211°.

Astronomers have been speculating over the nature of relationships between Jupiter and the short-period comets for more than a century without arriving at an entirely satisfactory answer, but that there is a tie-in of some sort cannot be doubted.

Do the long-period comets furnish similar evidence for a Something beyond Pluto? The evidence such as it is cannot be described as exactly overwhelming, but, nevertheless, it is worthy of our interest.

In 1911 William H. Pickering of Harvard College Observatory investigated the distribution in the direction of the aphelia of all long-period and parabolic comets. He found them to be scattered fairly uniformly over the celestial sphere, with a

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slightly higher concentration toward Canis Major between longitudes 75° to 105°, and latitude -36°. But their number exceeded the average for the sky as a whole so little that the evidence for a Planet X was not very convincing.

The information most desired is a clue to the planet's distance. This can only be secured from a knowledge of the aphelion distances of the comets. The knowledge available is not very helpful. The aphelia of the parabolic comets is at infinity, and the long period comets move in ellipses that are so nearly parabolic they might as well be at infinity. Thus these comets taken as a whole are not of much value as a guide to an outer planet.

The distribution in the longitude of aphelia of the well established comets *groups* is a bit more promising. There is a peak in the direction of 90°, which reminds us of the clustering of the aphelia of the short-period comets around 211°. This peak is due to the influence of the M Group, whose numerous members dominate the statistics. The aphelion of Comet Ikeya-Seki falls, in the direction of 102° 27' longitude, -35° 14' latitude.

Does this mean the aphelion of the orbit of a distant planet is oriented in that direction? We cannot attach much significance to any result based upon such flimsy evidence. But if another member of the M Group pays us a visit it will be something new to think about, something to give it added interest. As I write this Comet Ikeya-Seki will soon be beyond range of the eye. Is it moving in response to some distant planet far beyond the range of our most powerful telescopes?

M Group Comets and the Sun in Collision

So far as I am aware the earliest rational explanation for the maintenance of the sun's heat was the meteoritic-infall hypothesis advanced in 1848 by J. Robert Mayer. He pointed out that space is known to be filled with innumerable small bodies many of which must be drawn into the sun with speed approaching the parabolic velocity. As they plunge into the sun their energy of motion would be converted into heat. The idea sounded plausible and for a few years enjoyed considerable success.

The trouble with Mayer's hypothesis was that it was capable of being checked with observation. It wasn't complicated enough. For an elementary calculation showed that if meteorites were falling in sufficient quantity to keep the sun shining at its present rate, the Earth would have been destroyed by them long ago. But the principle involved can be used to make an estimate of the heat that would be released by a giant comet striking the sun. All we need to know are the mass and velocity of the comet at impact.

The mass of even the biggest comet is significant compared with bodies such as the planets. We know of several comets that have passed through Jupiter's satellite system without producing any detectable gravitational effects. When we assume a comet with a mass one-mil-

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lionth that of the Earth (5.97×10^{21} grams), we are assuming a giant comet indeed.

We don't need to guess at the velocity. The nucleus would encounter the photosphere with a velocity of 383 miles per second (6.163×10^7 cm/sec). The energy generated by the fall would be 1.134×10^{37} ergs.

The sun is radiating energy continuously over its whole surface at at the rate of 3.78 v 10^{33} ergs per second. From the arithmetic it appears therefore that the energy produced by impact of the comet would equal the *total energy* radiated by the sun in 50 minutes.

This is quite a sizable quantity of heat. Its effect upon the Earth would depend upon how the encounter occurred: whether the comet hit the sun on the near side or far side, and how fast the energy was released. My hunch is that it would be released in a minute or two but others disagree. If released all in a flash near the center of the solar disk, the result could be . . . very interesting.

Measuring a Comet's Tail

That evening I picked out a place in the hills back of our home where I thought Comet Ikeya-Seki should be visible. But when I arrived there about 4:30 next morning it didn't look so favorable. I couldn't see far enough to the east, and there were too many houses around. Peering over the rooftops for the comet I was afraid the sheriff might pick me up as another one of those confounded Peeping Toms. So I took off for the Mount Wilson road where I felt sure of finding a good observing site without running any risk of getting pinched.

A few miles up the road I pulled into a wide place and began scanning the horizon toward azimuth 118° where I figured the comet should be coming up, but there was no trace of it that I could see. Waiting alone in the early morning hours for a comet's tail to rise is not one of the most exciting ways of passing the time. After about twenty minutes when there was still no comet I began to wonder if maybe the Russians were right and the comet had hit the sun after all. I decided to push on up the road in search of a better site. It seemed to me I could remember seeing plenty of good spots with a clear view to the east — only now I couldn't find them. Driving along I risked a glance to my right, and there it was! The tail unmistakably projecting over the tree tops.

By this time I was halfway to the Observatory and knew I would have to drive all the way if I expected to see the whole comet. As that would take far too long I turned around and headed back for my original site. Dawn was coming on, and I began to wonder if all my precious time was going to be spent in gazing at the surface of Highway 2 instead of Comet Ikeya-Seki. At length I discovered a fine spot I had somehow overlooked on the way up. The tail made a weird picture framed between some hills, a pale slender column of light like the beam from a distant searchlight, only slightly

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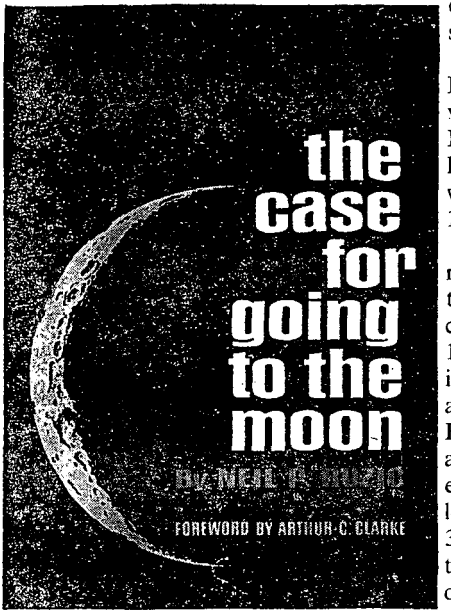

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curved with concave side facing south.

How long was the tail? The Big Dipper rising in the northeast provided a convenient reference scale. I estimated the tail to be the same length as the handle of the Dipper, which I happened to remember was 16°.

Knowing the distance of the comet and the *apparent* length of its tail, the length of the tail *in miles* could be calculated at once. But the 16° was not its real length but only its length as seen in projection against the background of the sky. From the geometry of the situation, and the information provided in the ephemeris of the comet, I got a length for the caudal appendage of 34,000,000 miles. I would not want to guarantee this figure. The length of a comet's tail is not something capable of precise measurement.

I had had to fight to keep my eyes open earlier, but when I reached home and climbed into bed I suddenly found myself wide awake! Yet I wasn't in condition for any work either. Not until afternoon, aided by a couple of cans of beer, did I finally obtain rest.

But it was worth every minute of it. To my chagrin I had been unable to discern the comet in the day. People still kept asking me, "Did you see the comet?", obviously hoping I would break down and confess that I had not. Now I could reply, "Yes, I saw it. What a splendid sight it was rising in the dawn sky." Then with a low laugh, "Naturally, it wasn't easy. You've got to work at these things, you know." END

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STATION HR972

by KENNETH BULMER

It was just an ordinary day on an ordinary auto superhighway — murder and mayhem all day long!

Most mornings Bartram would see the crane driver from the auto repair station walk over to HR972 for coffee and a post mortem on the night's incidents and possibilities for the day. All the time the driver sat blockily in the rest area with his thick fingers cradling the plastic coffee cup, his head would be half-turned, like a bird eyeing a worm, listening on his earphone for the first notes of a call.

Libby, the torso technician for whose sake he walked the hundred extra yards for coffee, played it cool, daily less shy, daily more inclined to talk about her own handling of units and less to listen to his accounts of rapid crane manipulations.

The first time Bartram had said: "So long as you maintain your efficiency rating, Libby, I'm prepared to allow you to flirt between incidents." He'd quirked an eye at the fidgeting driver. "What Samuelson has to say about his crane driver being a clear hundred yards away from his cab is none of my affair."

Now he would pass them with a small friendly smile as he went up onto the roof of the station to take his morning observations.

"Morning, Chief," the night super, Cy Weiss, a small dark intense man with a woman's charm, would say as Bartram appeared. He'd go through the night's incidents in a kind of ritual pronouncement: "An easy one." "Bad." "Two fingers is all, didn't even have to bring her in." And so on in a brief, capsulated edition of the night's news.

"Morning, Cy." Bartram waited

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until Weiss had left and he had been joined by Karl Grecos, the day super, and then he would cock his head towards the sky, ritually, and say, according to the state of the weather: "Big one today," or, "Rain. Should slow things," or, "Cloud's clearing, we'll get them through this afternoon."

Grecos had the wide, flat shoulders of an athlete, fair luxuriant hair from his mother and a quizzical smile that seemed to ask imponderable questions. But his hands never shook when he held a scalpel. He owned to a fondness for oily food, and his waistline was beginning to advertise this.

They both leaned on the guard rail and looked out on the road.

The Road.

From here the limits of the ten-mile stretch for which Station HR972 was responsible lay on the one hand behind the swell of the hill and on the other lost in a gentle undulation of the land leading up to Sennocke Forest. The road lay across the countryside like a fat white worm. Transparent roofing arched across the twelve lanes, hanging in a cunning curve of convoluting strength, unbuttressed and unguyed, a free overarching sweep of plastic that membraned the artificial environment of the road from nature's anarchy without.

Occasionally through whims in the course of the road the northbound twelve lanes could be seen, a silvery-gray rotundity, beyond their own southbound highway. A brooding awareness of waiting sharpened movement on the road, so that the mechanics around the helicopters on the roof landing spots, the medics sitting checking their morning take-over logs in the ready area, the men carrying in supplies and others carting away the detritus of the night all moved as though imbued with that breath of waiting.

A few cars spun through the morning light, individual and widely separated on the road.

On this morning Bartram pushed at his sleeves and said: "I can smell it, Karl. Meteorology gave us twelve full hours of sunshine. No rain. We'll be busy."

"Yeah." Grecos breathed through his nose, hard. "Cy had it easy. That means —"

"The road," said Bartram. "Just look at it. It's an affront to nature, really — yet. . . ."

"I always think," Grecos said, turning to lean on the parapet with his elbows angular, "It looks just like an extra long pipe of spaghetti my kids like to draw out on the table."

Bartram laughed. "You mean before they add tomato sauce."

After a short splintery silence, Bartram added: "I meant tomato sauce, Karl."

"I know you did, Chief. Gets you all ways, the road."

A helicopter's rotors twanged around with a startling roar and then choked away into whickering gulps of air. The cars speeding like arterial blood cells along the road made little noise. Already the heat of the sun's reflections was activating anticondensation devices on the roof. Vents

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opened like anemones as thermocouples reacted.

Bartram pivoted the pedestal-mounted binoculars and sighted on the auto repair station a hundred yards north. Men over there were working about their copters and cranes.

"If Samuelson speaks to me about one of my staff luring one of his away — I'll be hard put to it not to be rude."

"Samuelson's all right, Chief. He's new on the road. He'll learn."

"If he doesn't he'll be back in a breaker's yard packaging cars into tin cans."

The gray-green plastic surface of the road reflected no highlights. Its semitactile tread hugged the cars to it as they sped imperiously past. Most of the cars so far this morning had selected the inner and center quads. The twelve lanes were divided into three groups of four lanes each, the inner subdivided for heavy trucks and articulateds, and lighter trucks and coaches. Checking the speed radar meters, Bartram saw only six cars traveling at over a hundred and fifty miles an hour, all on the outer two lanes of the center quad.

An automobile on the inner center quad swept past at ninety miles an hour.

"The fool!" said Bartram heatedly. Then the high irritating wail of a police car tailing the laggard telescoped time, and the offending car increased its speed to conform to the law.

"That'll cost him a fat fine," said Greco with satisfaction.

The police car cut down the off-staging ramp that swept around beneath the road and emerged again on the service road leading to HR927 and the auto repair station.

"It'll be Barney," said Bartram. "He'll have the feel of the road by now." That was part of the ritual too.

They went down in the elevator, talking quietly. Past the rest area Bartram saw with a smirk that Libby's crane-driving beau had gone. The sound of coffee cups being washed swished steamingly from the kitchen.

The ceremonial quality of those early morning actions, genuflecting through the build-up time of waiting, helped men and women to adjust off-road mentalities to the demands of the motorway. Barney, heavy, muscular, his black patrolman's uniform creasing sloppily from too much sitting in cars, puffed as he stood up, one hand grasping the car door. Bartram smiled.

"Morning, Barney. Big one today?"

"Yeah. That's for sure. Did you see that creepy-crawly horror? Ninety in the hundred twenty-five, hundred fifty lane!"

"You sireened him smartly."

"Sireened him! I'd like to put a boot in his guts!"

Walking with Barney back to the rest area for a coffee, Bartram said: "How's Tommy?"

At once Barney enthused. "He's doing just great! Law school suits him. He'll be a great man one day. One thing's for sure, I'll do anything to stop him being a cop on the road, so help me.

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"He could do a lot worse." Bartram caught Grecos's eye and smiled, then they entered the station building; and, with the road out of vision, an unatural relaxation took possession of them so that they spoke and moved with a louder, more flamboyant gesture.

Outside the Road waited.

Grecos walked across to check the flow meters.

"Building up, Chief," he called. "Better than ten a minute and rising."

"No worries yet."

"I heard tell they were talking about cutting down the distance intervals." Barney sloshed his coffee around watching the wave ripples. "They figured they could set the radars to half the distance. Pack more cars in a length that way."

"They're close enough as it is." Bartram said dourly.

"That's what we say. But they have to move traffic. Ten thousand cars went to hit the road — something has to give."

"Yeah. And we know what gives."

High atop the station, in every room, in the rest area, in the garages, on the helicopter spots, above the basins in the wash rooms, the auto repair alarm shrilled. Hard on that strident call the alarm for HR972 chittered in harsh counterpoint.

Chairs crashed back. Coffee cups spilled. Feet hammered concrete. Helicopter vanes whirred into shining invisibility. The place emptied as though a time bomb set for *now* was found between everyone's legs.

Bartram's earphones said: "HR972. Grid six two eight. Center quad, two outer lanes."

That was one point two eight miles south of the station, set midway on its ten-mile stretch of road.

The helicopters rose buzzing. They slanted away steepily, low over the rounded continuous cylinder of the road, jets roaring. Early morning sunshine caught their white paint and dazzled from the red crosses.

Charlie, the ladder handler, crouched by the open trap in the floor of the chopper. His rough scarred hands grasped the controls, and wind tugged at his white coveralls. Bruce and Pete, the hook men, lay stomach down in front of him, their hands thrust deeply into the gloved remote-control equipment. Bartram glanced back. Everyone in the belly of his lead copter stood at stations, coveralled, helmeted, goggled, packs with their glaring red crosses strapped in regulation positions.

"Nice and smoothly now," he said over the intercom. "First today. Let's set the pattern."

The hook men moved their hands with gentle feeling motions. Below them at the end of the stinglike probes mechanical grapnels moved in unison. The copter pilot, Sally, a good flier, said: "Here we go. Hooks!"

Bruce and Pete struck, hooked the rings in the roof sections below, hoicked.

Like a bivalve forced open by a marlin spike the transparent roof panels opened upwards and out-

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wards. Charlie dropped his ladder clean through. It hit the gray-green plastic road beside a red sedan on its side, foam smothered, rear telescoped. Two roof panels further along the auto repair gang had their cranes down and were lifting the green roadster. It squealed like a trapped animal as metal tore. Police had healed off the two outer lanes of the center quad, their furthest light and radar beacon four miles back.

Bartram turned on his back jets and dropped straight through the hole, boots together, hands on the controls, seeing the flaring jet stabbing below him. His control line sizzled down the ladder. He hit the road hard, staggered a pace, then snapped the link from the ladder and dived at the red saloon.

His team followed in order, moving smoothly about their work. He saw Libby, calm and unflurried, her jet cut as her feet touched down.

The auto repair gang had the yellow car and the late model General Autos sedan, the last in this small, four-car pile up, hoisted away. Only the General Autos sedan could be recognized by make and year; the other cars were merely colored contortions of metal. The sweeping gang were already running their giant vacuum cleaners across the road, the broken shards of metal and glass, the bits of plastic and the odd items of personal belongings pinging as they whirled up into the bags.

"Hurry it up!" Bartram shouted over his phone. "The auto boys have nearly finished."

Team One had cut away the scarlet car's side. The team leader leaned in with his shears and cut away the driver's harness in four neat snips. The passengers sat cocooned in the airbags that had inflated around them in the moment of impact as transducers sensed the acceleration rate change. Swift stabbing jabs punctured the bags. Hands and grapnels took the passengers out. By this time the scarlet car, foam dripping, trailing metal and twisted strands of cabling, had been hoisted twenty feet above the road level.

The teams from HR972 worked either clinging to the car or treading air on their back jets.

The driver was hoisted away first. The harness had saved his life, and the absence of a dashboard and the deep padding over every projection had saved him from fatal injury. But his ribs were mangled, his pelvis splintered and flattened, his face congested. Libby took over with her assistant torso technicians, was already working on him as they floated up through the hole into the belly of the waiting copter.

"He'll do," she called down flatly.

The two woman passengers had been bruised from neck to knees. Calmly Bartram stripped their flowery dresses away, snipped and snapped at lacy underclothes, revealed white flesh turning green and blue as he watched. The team took over, cocooning the women, plastic compresses and ointments covering up in soothing balm as antishock injections turned brutal unconsciousness into controlled sleep. Bartram swung away.

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Team two was working on the green roadster, their white coveralled figures clustering around the car strung under the roof like white moths around a green lamp.

Team three had taken the auto-stretcher-bound driver of the General Austos sedan out, and he was already on his way up to the copter.

"Team Four!" called Bartram sharply. "What's the holdup?"

The yellow car had been concertinaed. Despite all the cunning guile of automobile manufacturers in transducer-actuated airbags, in padded safety within, in plastic-layered stretch glass, in box-girder construction, the yellow car looked like a cardboard carton that has been smacked between two fists. The road wheels had been taken away from where they had been scattered across the road. But the doors had not opened; their safety locks functioning still under the one hundred gravities stress at the moment of impact.

Team Four was trying to cut its way in.

Team Leader Steve said, breathlessly: "Jammed hard. Cutter flame too near driver. Going in from the roof."

"Well, get with it, Steve! Everyone else is away."

The other three cars had been emptied of casualties, the copters already whirring away back to HR972. Police were retriving their radar and sight beacons, progressively pulling in to the site of the incident. The four cars hung from the roof, and the auto repair gangs were beginning to take them out through the roof panels.

Police Super Metcalfe walked slowly up the white line marking the two outer lanes of the center quad. His face looked grave and calm, down tilted, the light catching the slant of his jaw and the white bristle of his eyebrows. He walked as a captain paces his bridge during a storm. Then he looked up with a sharp decisive movement.

"All clear. You may open the lanes again."

His black car snarled alongside, and he stepped in and was whisked away. Sixty seconds later the first of the traffic whispered past the spot where the incident had occurred.

The road was open again.

All the time traffic had been passing in a long blurred procession of speed on all the other ten lanes, unconcerned, hardly seeing, matter-of-fact.

Bartram angrily started to call Team Four.

Steve cut cross. "Belaying cutting. Driver dead."

Bartram wiped his mouth with a tissue. "Well, you can't win them all."

They packed up and coptered back to the station.

The white buildings like shoe boxes below tilted as the copter swung for a landing, and Bartram's earphones said in the voice of the dispatcher: "Incident for HR972. Grid one nine five. Outer quad, three inner lanes."

"Up," said Bartram. Then: "Outer quad — that's always rough."

Grid position lay one point nine five miles from the beginning of

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their section as it emerged from Sennocke Forest. Bartram looked ahead. "Twelve lanes of high-speed death," he said. "I must be feeling old."

This time they hit the road before the autorepair gangs had lifted all the cars. The outer quad was the high speed quad. Two hundred, two hundred fifty miles an hour, strictly lane controlled. A pile-up could telescope a hundred cars, radar alarms locked to brakes or no damn radar alarms. Bartram sent support Teams Thirty through Forty to check the cars stopped, undamaged, in back of the incident.

"Look for internal bleeding, shock, cracked or bruised ribs, general buffeting." He cracked the whip. "You don't have to hit a car to damage yourself. Don't let any through until they've been checked."

Libby jetted past holding a girl with no legs, her aides with the plastic bags and the pumps hovering beneath.

The three lanes held a tangle of cars like a child's toycar box at bedtime.

Libby's voice screamed: "You can't sew your damn legs until I've replaced the liver and pancreas!"

Gloria, the limb technician, screamed back: "Well hurry it up, Libby! The legs are out of deep freeze, and they won't wait all day!"

The swab-up boys were already squirting chemicals to clear off the blood from the road's neutral gray-green.

In the hospital box temporarily tethered from the roof Karl Grecos called down, his mike still worn beneath his surgeon's mask: "Chief! Unit's brain damaged too extensively. He'll never think normally — well, you know! Permission to check out — I've a waiting list —"

"Check him out, Karl."

Handlers sheeted out the stretcher, and another unit slid onto the table. Grecos trepanned and operated with an efficiency seldom matched on the road; but even he could not work miracles.

Gloria had begun attaching fresh legs to the girl, and Libby was deep within the belly of the girl's father, replacing kidneys that had been smashed like squashed oranges.

A handler triggered a pick-up truck across. Discarded legs and arms protruded like pencils from a glass. Bartram looked closer, said: "What's that head doing in there, Bill?"

"I had the okay on that from Mister Grecos, Chief. Clean decapitation off that roadster. Guy was driving with the top down. Took it off clean as a whistle."

"Check."

Cars were being hauled up to the roof out of the way to await their turn to be lifted through the access panels. The auto repair gangs were sweating it out today. Personnel from HR972, too, weren't sitting down on the job. Bartram chivvied and chased them. "You haven't begun the shift yet!"

"Can you hold that girl — that unit — on intravenous oxy 'til we hit the station?" Libby asked viciously.

"Just about." The nurse aide stepped up the flow.

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"What's the problem, Libby?" asked Bartram, jetting across.

"All out of her size capacity lungs, Chief. Why do these girls all have the same lung demands, I wonder?"

"Make a note to carry more spare lungs in that size bracket. I'll confirm in standing orders."

"Check."

Some of the choppers lifted off, their red crosses shining bravely against white paintwork. The auto repair gangs cleared their area. The police began to pull in their radar beacons. Police Super Metcalfe's car spun up, and he jumped out, ready to give the final word.

"Clear?" he asked Bartram.

"Clear. Didn't count the tally."

"Not too bad. Fifty cars — we think. Some of the pieces were rather small."

"Not as small as some of the bits we pick up."

Metcalfe grimaced. "You can keep your job, Bartram."

"If people intend to drive on the highways then someone has to look out for them. What else should we do? Let them bleed to death by the roadside? Let them lose an arm or a leg or a liver and go through life without? When we have banks stuffed with human spare parts?"

"All right, Bartram. My job is to keep the road open. Your job is to repair the humans on the road. We work together."

"So long as we need roads then we'll be needed."

Metcalfe began his ceremonial walk down the white line.

"Until they design foolproof cars and foolproof roads, you mean."

"When they do."

"They will, one day."

"Speed the day, then."

Metcalfe waved his arms, shooing the last of the vacuum cleaners away. He signaled. His black car picked him up. Bartram jetted up to his copter. The road was open again.

Sixty seconds later traffic flowed past the site of the incident, travelling at two hundred, two hundred fifty miles an hour.

This time they made it back to the station. At Station HR972 a dynamic energy possessed them as kits were made up to strength, more spare arms and legs, kidneys, livers, jawbones, more plasma, more whole blood. More splints and bandages and vials of rare and costly drugs. More of everything to repair the human frame subjected to force it had not been designed to withstand, forces that would in another place and another time have killed irrevocably.

Down in the hospital medics were checking out units that had been processed, seeing them onto the ambulance service stretchers, making sure they brought back their own stretcher and skeletons — stores were touchy about unnecessary waste of materiel.

"There they go," Bartram said to Grecos, watching the ambulances pull away. They ground in low gear out up the service ramps and so out onto the road for conveyance to the city hospitals.

"Yeah," said Grecos. "The old pipeline."

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"All patched up and smiling, they'll be out on the road again soon. Maybe we'll even have some of them through here again."

"Still and all. You have to *have* the road. I mean, roads are the life-blood of our transportation system, aren't they?"

"Oh, sure," said Bartram, rubbing his jaw and remembering. "Sure."

"I mean —" Grecos looked his perplexity. "You can't legislate roads out of existence. I mean — they exist. They have to. How could our civilization exist, else?"

Bartram checked the flow meters. "Coming through better than fifty a minute now."

The alarms screamed. "Incident, HR972. Grid eight five six. Inner two lanes, center quad. Overspill to outer lane inner quad."

"Hell!" said Grecos, running. "That'll be a coach load of kids. I can smell it."

Bartram snapped his transceiver over. "Additional juvenile supplies. Urgent. Get with it."

As they climbed into the copter he said gently: "It's a quiet one today, Karl. Wait till tomorrow. Holiday. We'll be busy then."

The copter rose, the sun shining on the red crosses.

"Yeas. Busy. But I figure I'd rather be here than there."

He jerked a thumb at the road.

Like a white worm devouring the world, the road thrummed on, uncaring. END

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About 2001

by DAVID A. KYLE

An inside look at next year's sf super-movie — already hailed as "the greatest of all time!"

In a 70-foot-high sound stage of the MGM studios near London, England, there stood this year a peculiar tower of board lumber, nailed piece by piece into a structure resembling a huge packing crate containing a "space wheel."

This was my first, impressive introduction to the multimillon dollar movie-making project entitled *2001: A Space Odyssey*. My guide was Arthur C. Clarke, the eminent writer and co-author with producer-director Stanley Kubrick. The production, in Cinerama and Technicolor, is scheduled for a reserved-seat release in the Spring of 1967.

The set of the wheel is actually 36 feet high, although the scaffolding is a good bit higher, and weighs some 38 tons. Representing one of the dual centrifuges in orbit around the Earth, this is typical of the enormous effort being made to create a science-fiction masterpiece which will surely be nominated for — and likely win — many Academy Awards. This full-scale operating model was created and constructed by a team of engineers from Vickers Armstrong of Great Britain in six months and is a remarkably complex machine which actually rotates. Within the hollow core is a shooting set; the 125-foot interior circumference a solid, practical stage. Along its entire length, with its built-in props and control panels, the light-

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Stanley Kubrick and Arthur C. Clarke before one of their sets

ly dressed actors walk, feet pressed to the curved floor by the spinning in simulation of the I-G of Space Station 5. The technical problems for this set alone were, by Hollywood standards, enormous. When the cameras inside, carefully disguised as part of the futuristic setting, began filming, Director Kubrick controlled operations by closed-circuit television. Power cables running into the turning centrifuge had to be specially fitted with "slip" connectors.

At the peak of activity at the MGM Boreham Wood studios, eleven of its stages were in use by the *2001* group, which was practically a take-over of the plant. At one point the production overflowed into Shepperton Studios, some 225 miles away. All five main stages were in use during the Spring of 1966 when I was there. Now the most elaborate of the sets have been dismantled while the "special effect" wizards do their work.

As a visitor to the scene of such a major undertaking, I was conscious of two intermingling auras surrounding it. One was the sense of secrecy and mystery. The other was the excitement. The excitement, quite naturally, comes from that heady

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combination of movie-making itself and the special and rare creative visions associated with a genuine science-fiction film. As for the secrecy and mystery, they are deliberately created by Kubrick. Although there are no "SECRET" signs posted, there are, nevertheless, many secrets. There is also tight control of publicity and a cultivated reluctance to discuss the film in any of its detailed aspects. These movie-makers are painfully aware of the low state of science-fiction movie-making and are grimly determined to be taken seriously. They are acutely sensitive about receiving facetious or dishonest publicity, despite its proven value to make money, and they are unrelenting in their efforts to convince others of what they themselves already believe — that they are making the greatest really-true-science-fiction picture that has ever been made.

As Kubrick and Clarke point out, predicting life as it will be lived 35 years from now can't be compared with predicting 1966 back in 1931. "Science today," they say, "intends to double its present store of knowledge in the *next seven years*. It once took man 10,000 years to accomplish that feat. Just fifteen years ago the time for doubling was one decade." It is accelerating fantastically, so will it double thereafter in five years? What will that mean for 1978? "By this reckoning the year 2001 is a long way off in terms of human accomplishment."

Naturally mankind's scientific progress with its technological developments will be amply explored by the film, but, after all, this is a piece of entertainment, demanding understandable adventure and thrills. With this in mind, Clarke and Kubrick have concentrated on a provocative premise: that there is alien life seeking to contact us.

Alien life, of course, has been the premise for scores of badly made horror films, but the makers of *2001* are dedicated to the integrity of the probability. They have grounded their beliefs firmly on the new science of extrasolar intelligence. They are cognizant of the fact that there are seven research projects under way in the United States alone to develop remote hardware devices designed to detect primitive life or at least pre-life evidence within our own solar system. Logically, then, this is a new adventure awaiting humanity: the days of discovery that we are not alone . . . and then the challenge to find and meet our galactic or extragalactic neighbors.

2001 is, therefore, a dream. Not a nightmare, but the pensive consideration of what the race of man is inevitably going to face. No one can doubt that this movie is intensely serious and philosphically profound, contrasting sharply with Kubrick's Hugo-winning serious-farce, *Dr. Strangelove.*

Kubrick and Clarke's world in which extraterrestrial life is discovered and pursued encompasses more than just Earth and its moon. The solar system is the setting. Civilization is almost totally automated and computerized. The work week is halved; there is no war or incurable disease; life expectancy is much high-

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er, and, as Clarke says, "we have just ended the centuries of the savage." Every aspect of life, personal, professional, scientific, had to be examined prior to actual camera work: clothing, cosmetics, pens and watches, personal transportation, food, *etc.* It's been a thorough, perhaps the greatest, research job for the movies. Over forty technical and industrial organizations around the world participated with special gadgets, machines and guidance, such as IBM, Coty, General Mills, Hilton Hotels, Bausch & Lomb, Honeywell, Bell Telephone, R.C.A. For example, DuPont created a special fabric for the spacesuits, consisting of a sheet of metal bonded to a sheet of nylon by a secret process which makes it as pliable as silk. Special expert consultations happen daily, usually with the two top scientific consultants permanently attached to the film, Frederick I. Ordway, III, and Harry H. K. Lange, formerly with the Army Ballistic Missile Agency and NASA's George C. Marshall Space Flight Center and now with the General Astronautical Research Corporation of Huntsville, Alabama. Thirty-five design artists integrated the various materials for six months under Art Director Tony Masters.

The prop man, Property Master Frank Bruton, knows that "interplanetary matter" doesn't call for a smoke bomb or some theremin sound effects. He researched and learned that "interplanetary matter is the collection of free electrons, atoms and radicals, tenuous hydrogen and other gaseous molecules, minute particles of dust, grain, ice spicules and micrometeorites that move through interplanetary space in enormous quantities and at astronomical speeds."

2001's developing action introduces a 500-foot-long spacecraft, the *Discovery,* which is to pursue the investigation of the alien intelligence. The vehicle is not completely constructed as a set, but the launching section for its scout craft is — another 40 tons of construction by Vickers Armstrong. It was here at Sound Stage 7, inside the control room, that I first met Stanley Kubrick. He was a short, dark man with a scraggly beard, quiet, serious, — a direct contrast to the tall, ruddy Arthur C. Clarke with his loud guffaw and easy smile full of white teeth. Close up within the scenery, myself an inhabitant of that world of fantasy, I could see the intricate detail and appreciate the elaborate pains that were being taken to make things "authentic." There is no doubt, as Clarke says, that Kubrick is a perfectionist. Hidden away, unseen by the camera and therefore by the viewing public, are the little touches — instruction decals, manufacturers' specifications, directions for the day-to-day events of life. This is the product of the hundreds of technicians, highly organized, who were assigned to master every twist and turn of the story.

I also met one of the stars, Keir Dullea, who is in his late twenties and achieved recognition as the emotional boy in *David and Lisa.* He was wearing the uniform of the

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"U.S. Space Force." Incongrously, in the background, workmen were constructing the set for the prologue of the film: a desertlike watering hole of the Pleistocene era, about four million years into the past.

When the movie is released there will be much fanfare and a variety of tied-in promotions. One such will be a unique game in which players will be able to team up either with people or computers. The details are a "top secret." It is hoped that the unusual project, at present secreted in locked safes at MGM and the design headquarters of Parker Brothers, Inc., in Salem, Massachusetts, will create a new dimension in games. Computers have been of particular interest to Clarke and Kubrick as a basis for the future they see. Today we have already reached third generation machines in which computers are made by computers which in turn are made by computers. Soon computers will be random wired, like the human brain, and will be made to be "taught" rather than made to do any special job.

Before I began my visit to the sets, I complimented Arthur by telling him that it "sounds as though it'll rank with the H. G. Wells film *Things to Come!*" His immediate, matter-of-fact reply was, "Oh, it'll be better than that! It'll be the greatest science-fiction picture ever made!"

As usual, Arthur C. Clarke, author of some 40 books, winner of the Kalinga Prize for science writing, recipient of the gold medal award of the Franklin Institute for originating synchronous communications satellites (Early Bird), Aviation-Space Writers' 1965 prize-winner, the man who calls Stanley Kubrick "a genius" — this confident, optimistic and predictive Arthur C. Clarke will probably be right. END

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THE SHAPE OF SHAPES TO COME

by ROBERT BARTLETT RILEY

A distinguished architect brings us a specialist's view of the way we'll build our homes tomorrow.

The profession of prophecy, if not honorable, is at least ancient. Its continued popularity through centuries of failure is a measure of man's curiosity and naivete. The failures of dreamers and visionaries to predict the future is easily enough understood. They are often enough strangers in their own world; they dislike it too much to understand it. Viewing their world through their own prejudices, they miss the vital forces that mold it, that point to the future. Curiously enough, the prophecies of knowledgeable men involved in the accomplishments of their own time are little better. As Arthur C. Clarke wrote in *Profiles of the Future,* prophecies by those most technically qualified not only consistently fail, but fail from being too conservative.

Prophecy involves three problems. First you must anticipate what things science and technology will be capable of doing at some future date; secondly, you must try to guess what use people will make of these capabilities. In short, you must try to guess what will be *possible* and then guess what actually will be *done.* Added to these guesses is a third and even more tricky and interesting game — that of predicting how the first two elements will fit together into a whole: not only what could, and what would be done in a future building or city or society, but how that future building or city or society will *look* and *feel.* Because material advances are easier to forecast than social patterns, prophecy becomes more difficult as one moves from the first problem to the second. As

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one moves to the third it becomes so complex as to be almost certain of failure. It is easier to guess what will be possible in an advanced technology of building than to guess how society will use that technology to build a house. It is even harder to guess how society will fit those houses together to form a city or to guess whether "houses" or cities, as we know them, will even exist. But as every science-fiction reader knows, this third part of prophecy is the most exciting and rewarding.

All prophecy starts with conscious or unconscious assumptions. Let me assume three forces: geometrically increasing scientific and technological abilities, an increasing material prosperity shared by larger and larger portions of the population, and an increasing population pressure that will, coupled with man's curiosity, lead to the development and settling of arid lands, the oceans and space. Knowing nothing else about the future, these three assumptions alone give us strong clues about the shape of tomorrow's buildings and tomorrow's cities.

Turning first to the simplest part of prophesying, what can we expect in advances in building technology? If some of the guesses made are old stuff to science-fiction readers, it is largely because an imaginative S-F writer is likely to be a more accurate prophet than anyone else.

The most obvious advances in building technology will be in structural systems — the problem of enclosing space and supporting the enclosure. Most of the progress during the last century has been in the scale of building. As a building increases in area and height, there comes a point where all the strength of the structural material is being used to carry its own weight — nothing is left for supporting walls, roofs, wind or snow loads. The successive uses of various metals during the last century — cast iron, then steel, now high strength steel and lighter alloys — have enabled man to span larger areas and build taller buildings. All this has been done with only the basic engineering techniques known to the ancients — the post and beam, the arch and the dome. When the modern lighter materials are used in new space-scanning techniques, as with space frames, the increase in scale becomes enormous. Even more radical techniques, alone or in combination, will be used to cover large column-free areas.

Three techniques are now being developed: Tension structures, suspension structures and air-supported structures. The great advantage of all these techniques is the ability to carry greater weight or "live load" in proportion to the weight of the structure or "dead load." Most structural metals work far more effectively in tension than in compression. This fact has been known for years but seldom applied to building. The development of structural systems in tension will produce huge spaces enclosed under a lattice of light tubular rods or great geodesic domes. We also may see huge floor spaces hung from suspension cables, either in a familiar style. (the George Washington Bridge enclosed for office space,

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for example) or in tall, slender towers with floors hung on perimeter cables spread from a single compression core of concrete.

Another unfamiliar building shape we will see soon is the monumental tent. Steel cables and light plastic films will be used, in the style of Arabs' tents, to cover areas the size of stadiums. And before many years air structures, probably the finest portable buildings ever devised, will be a familiar feature of our landscape. They have already been used for functions as various as branch banks and traveling automobile shows; they will no doubt be the party pavilions, storage silos and evangelists' tents of the next generation.

The safest guess, then, about the near future is that we will see a new breed of bigger, lighter buildings of unfamiliar shape, many of them appearing quickly and then disappearing all over the landscape.

Turning from new structures to new materials, an exciting prospect is the development of lighter, plastic, moldable materials that will lead to a world of new architectural shapes. Many societies have built their architecture out of such plastic forms — Oriental mosques, Asian temples, the Dogan huts of Africa. But all these achievements were accomplished under the handicap of heavy earth-derived materials — brick, mud, tile, and stone. The plastic possibilities of lightweight concrete, or some future material, sprayed on to wire mesh forms have hardly been touched. They will be; indeed the puritanical revolution of the early twentieth century seems already over. The architectural avant garde is busy designing shapes and forms that would make the great revolutionaries of twenty years ago wonder what they had brought forth.

Current architecture is characterized by proliferation of materials to the point of chaos. An older generation of architects had only a limited range of materials available, and their lot was a happier one. Hopefully there will be an eventual return to this state in the future, marked by the perfection of gleepsite.

Gleepsite is a term (now facetious) for the universal building material. It can carry great loads, but it is almost weightless; it can span great distances and assume any shape; it is watertight and can vary from transparent to opaque. Its availability would change architecture from a laborious job of assembling and jointing to a creative search for beautiful and extravagant forms. Obviously it is the stuff that science-fiction cities are made of.

A less spectacular but closer development will be the development of sophisticated earth-stabilization techniques. Such rudimentary techniques as are available now have been confined to sinking foundations for dams and highways. But eventually they will be used to create buildings themselves, buildings not on the earth, but *of* it, the pueblos of the twenty-first century.

The lighting of buildings is often described in science fiction, more so, probably, than any other element of architecture. In the real

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world new lighting has yet to produce anything more interesting than ever increasing levels of brightness. But a change is not far off. One company has developed a light source that almost exactly reproduces the visual characteristics of direct sunlight, a source that will be ready for general use in perhaps two years. The compounding of such techniques will inevitably lead to a new world, a world where there is no night nor day, where houses and entire cities are lit solely at the whim of man, reproducing the whole range of light in the natural world, going beyond it to effects that have never been seen on Earth. We live by light, and such control would be likely to drastically change the psychology of man and society. (If this sounds far fetched, remember Asimov's *The Naked Sun*).

A favorite science-fiction gimmick, one not far from reality, is the self-luminescent surface that glows when electrically or chemically stimulated, whole walls, floors, and ceilings that give off a faint glow or brilliant illumination. Eventually these surfaces will no doubt be capable of changing patterns and colors, all under the control of a console.

Advances in lighting will be only one part of a far advanced technology of environmental control. Our present control systems have developed rapidly in the short time of about seventy-five years, until today almost one half of the construction cost of a complex building (a laboratory or hospital, for example) is spent on electrical work, heating and air conditioning, plumbing, elevators, sound systems, *etc.* The certain geometric progression of current environmental technologies will, even more than structural techniques, change what we know as architecture. We think of windows, for example, as natural and inevitable parts of any building, but we seldom consider their purpose. Historically the window performed three functions: it provided light, ventilation, and a view of the outside world. We still instinctively depend on it to do these three things, but in actuality the functions of lighting and ventilation are now performed almost entirely by mechanical means. Some years ago we began to build factories with no windows, and now the almost windowless school building is in vogue. These schools are not totally without windows of course, but the windows have rationally been planned to serve only the function of view. They are usually placed to afford students changing classes a view of the "natural" world of sun, weather and planting.

If we look further at this idea of creating artificial environments, two almost certain predictions can be made. One is the extension of climate control beyond the scale of individual houses to groups of buildings and eventually cities. We are familiar with shopping centers with enclosed, mechanically lit and air-conditioned malls, complete with trees. This is a small beginning. A recent architectural magazine featured a proposal for completely enclosing the center of a new village far above the arctic circle in Sweden.

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There the ability to create an environment means not just a more pleasant weekly shopping trip, but a different social life for an entire community. Some day whole cities will live under such enclosures.

The second certain development will be the perfection of self-contained utility cores that will make buildings completely independent of today's increasingly complex network of gas, electrical, sewage and water lines. A small mechanical unit will heat, cool and light a house, condense water from the air, prepare meals, clean the inhabitants (and the house, too) and dispose of wastes without having to "plug in" to any fixed utility services. This means that almost any piece of ground is a potential house site. Furthermore, when truly clean, compact and powerful motors for air-cushion transport are developed, every house may *truly* be a "mobile home," capable of moving anywhere on the Earth at a moment's notice.

These, then, are some of the things that a future building technology will be able to do. But what actually *is* built will be conditioned by social values.

A neat and gloomy illustration of this is the failure of mass-produced or prefabricated housing. Despite our brave new world of technology, the construction of a house, or any small building, remains a craft. With the exception of the mechanical work, there is little in the building of the average house of today that would be unfamiliar to a carpenter of Christ's time. The absurdity of this is illustrated by the familiar analogy with the automobile. If cars were built like houses, with the local garage man ordering and fitting together pieces, the lowest priced models would probably sell from upwards of $15,000.00.

The special irony is that all the design and structural problems of prefabricated housing have been solved many times over. But people, or at least the American home buyer, have never accepted such housing. There has been no social pressure to solve the distribution and economic details; and so prefabricated houses are not only rare, but as expensive as conventional homes. This may change, for we accept the consequences of mass distribution in practically every other area, but it shows clearly that what can be done and what gets done are often very different. But even so, existing social forces ensure that mass-produced housing components will eventually be in common use. We may wait a long time in the United States, but not in other parts of the world. Nor does prefabrication mean any loss of individuality; other more "primitive" people, more spontaneous and less hidebound than we, will joyfully accept prefabricated building parts and arrange them just as whimsically, decorate them just as fancifully as they do in shanty towns all over the world now.

In an affluent "consumer culture" such as our own we may reach the time of the disposable house. Today the average man in the United States expects every other thing he owns to become obsolescent, or at

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least unfashionable, quickly; his house he expects to keep for years and then sell for what he paid for it. Housing is the last frontier unconquered by the doctrine of planned obsolescence. In fifty years, however, we may trade in our houses as casually as our cars (or flying belts), and the White House may be thundering about the ugliness of old house junkyards blotting our landscape.

Aside from this semifacetious example, what can we say about how social forces might channel future technology? Man's development of technology and his use of it have historically been characterized by two patterns. First, the most rapid and significant advances in science and technology occur in those areas of life where society demands progress. Society has only so much energy; it pioneers only in the fields it thinks most important. Secondly, such innovations, when they leave the laboratory or their specialized contexts and begin to trickle into every day life, are at first fitted into traditional forms. Only after a time are the new achievements expressed honestly, on their own terms.

Thus the first automobiles looked like carriages, and the nineteenth-century advances in structural and mechanical systems were used to build buildings in the prevailing historical taste. It took many years for a "modern" architecture to develop, one that expressed these advances honestly. Applying these rules to our own time we can guess that the revolutionary new building techniques will be by-products or feedback from research in other fields, for our society cares more about the arms race, the space race and medical research than about housing people. We can also guess that buildings will work differently and be built differently, long before they *look* different.

Specifically, this means that new building technologies will likely result from space technology. Mechanical systems are the best example of this. By far the most signficant recent advances in environmental control have been results of the space program. Not only are means being devised for much more powerful control, such as keeping a man comfortable in the low temperatures of space, but the systems used are incredibly light and compact. The compact climate-control devices predicted earlier for houses will almost certainly be a derivation of such systems. It also means that if we are looking for really new and revolutionary forms, we must be prepared to wait a good long time. The new sophisticated residential climate controllers, for example, will at first sit behind knotty pine panelling in ranch style homes. For new architectural forms, as well as tehnologies, will occur first as feedback from other fields.

Historically, as man has settled different parts of the Earth he has carried his familiar architectural forms with him. Even in the face of a new and severe climate he has delayed, perhaps a generation, in adopting suitable shelter. The high mortality among early colonists in the United States, for example, was largely due

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to their clinging to English forms of building in the cold winters of Massachusetts and the rainy summers of Virginia. But as man settles space and the seas, he will be unable to afford this idiosyncrasy; he will have to discard traditional forms and develop new ones. And it will be in space and in and under the seas, I think, where man will first develop truly radical and exciting architecture: light spidery domes, easily moved and assembled, dotting the moon and the planets; huge air-supported bubbles floating on the seas, and small self-powered dwelling and work units moving on them and under them. These structures will of course be designed for particular environments, and it is unlikely that they will be exactly reproduced in everyday buildings, at least after their novelty has worn off. But such structures will at least alert us to the wonderful things that can be built when new building techniques are honestly exploited, rather than covered with traditional forms.

Beyond the problem of guessing how future buildings will be built lies the question of how man will arrange these buildings to form cities.

Over the last century man has collected in ever-increasing numbers in cities of ever-increasing size. Put simply, this has been due to two causes: population growth and a growing scarcity of jobs in agriculture coupled with a relative abundance of jobs in the city. This trend has been most marked in the most technologically advanced nations, but as less prosperous, non-Western nations begin to industrialize, they too show the same trend. In the near future, the process of urbanization will continue and probably accelerate. While the most "advanced" cities are also showing a tendency towards diffusion and lower density, (a point I shall return to presently) there is no doubt that a dense urban pattern, the mark of the traditional historical city, will continue for a long time yet. The most exciting glimpses of the future city come from architects and planners who are theorizing about means of structuring this ever-increasing growth. Their ideas are based on a dissatisfaction with the traditional form of the city: a densely populated core surrounded by concentric rings of decreasing population and amenities. They are seeking a way to allow the city to grow, to become an "open-ended" city and yet retain a reasonably uniform density of population and urban services and conveniences.

The ideal city, they think, should be dynamic and not static. Not only should it be able to grow, but buildings and areas should be "disposable," capable of being replaced with new construction when decay or obsolescence comes. This new idea has been aptly called the "plug-in city." The plug-in city is a skeleton of services — power, water and sanitation, mass transport channels, roads and the like. This framework would be the basic element of the city. It can be compared to the bones or the circulatory system of animals, or, since it is to be capable

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of growth in one or many directions, a crystalline lattice work. The framework would be permanent; the buildings would not. The buildings, if we can still call them that, would be collections of prefabricated shells which would be plugged in to the framework to achieve the functional grouping needed. When a particular "building" or collection of these units wears out, either in whole or part, or when it no longer serves its purpose well, it will be changed by replacing cells or by rearranging them to form a new functional unit. The plug-in city is to be open ended in time, but closed in space. That is, it will grow or contract over the years as required, but at a given time its shape will have definite, clearly marked borders. It will not blur out gradually and endlessly over the landscape in ever decreasing density as cities do now. This definite shape would allow us to preserve a fairly natural landscape around the city even as we house more and more people in the city itself.

The plug-in city (and indeed even the more conventional city shapes now being suggested) in another way differs from the cities we know — it is truly three dimensional. Even though our present cities have skyscrapers hundreds of feet tall, their basic concept remains two dimensional, for all the services — the utilities, roads, transit lines, etc. — are basically on one level. In the future city all these services will exist on many levels, above and below ground. The essential structure of the future city, in reality, as well as theory, will be not a plan on paper or the surface of the ground, but a three-dimensional lattice of interconnected volumes.

Now this future city, apart from the "disposable" aspect of its building cells, is remarkably like a favorite image of science-fiction, an image we might call the "Super-City." Wells described the Super-City long ago, and more recently Asimov made it frighteningly real. Like the future city I have described, Super-City has millions upon millions of inhabitants, hundreds of levels above and below ground connected by a complex net of goods and passenger conveyors, and a definite contained shape. Interestingly enough, the science-fiction writers usually portray it as a city of fear and degradation.

I think that the Super-City is unlikely ever to materialize. A very scaled down version of it, or of the plug-in city, may develop in the next decades, but only as transitional forms. The city as such, despite the clamor of urban renewal and the sneering at suburbia, will probably disappear. Communication and transportation improvements will destroy it, indeed their forces are already at work. With the growth of urban areas in the last century has also come a diffusion of the city; it covers more ground and contains more people, but it does so at a radically decreased density.

Two factors have caused this. First, the telephone and the mass communication media have partly freed us of dependence upon face-to-

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face interchange for daily routine. Secondly, the fixed-bed transport systems of the past — the ship, the trolley line, the railroad — which did so much to structure the historical city have been largely replaced by the automobile — a cheap, almost universally available machine which takes its occupant wherever he wants to go, whenever he wants. These forces will continue to eat away the city. Tomorrow's transport, be it ground-effect machine, flying belt, or antigrvity scooter, will be totally independent of fixed-bed structures; even roads will disappear. Sophisticated communications techniques such as teleprinters and videophones will be universal in the near future, and man will no longer require physical proximity to do his business. Automation will help eliminate the need for housing adjacent to production centers.

With these developments the city will no longer be needed for the routine work of society. Men will gather together in groups only because they want to, not because they must. Instead of the traditional multipurpose cities, there may be only smaller, special-purpose cities, perhaps cultural communities and pleasure ports. (Culture, amusement and sin all seem to be more fun when done in crowds, and where diverse attractions are crowded into a small area). Most of the earth, and the oceans too, may be settled at a relatively high density, but the character of the settlement will likely be more suburban than urban. Even the most totalitarian society will find it difficult to pen people who have access to flying belts (or flying homes) into concentration camps such as the Super-City. A possible development mentioned earlier, dwellings that are not only self-contained but self-powered, would also destroy the city we know and change the mold of society.

Such a house might produce a planet of nomads, where only those nostalgic for the past lived in fixed residences. The ownership of a "house" might be an anachronistic status symbol akin to the remodeled New England farmhouse of today.

Now at this point, having seen a visionary dream of tomorrow's cities and tomorrow's buildings, one might naturally wonder what is actually being done to anticipate the dream. The answer, unfortunately, is very little, at least by architects and planners.

Not long ago, in the years roughly from 1918 to 1930, architects were dreaming great futuristic dreams. The German architects, particularly, pioneered fantastic visions of future cities. (One of the prominent visionary German architects of that time, Adolph Scheerbart, is even said to have been a sometime science-fiction writer). But for whatever reasons, the dreams died. Today only a handful of architects still mine that vein of the imagination. Indeed in the last few years, architects have increasingly turned to historical conceptions. Though they design modern or even fantastic shapes, they openly admit that they seek their principles and inspirations in the building and cities of the great his-

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torical epochs. In so doing they not only fail to contribute to the intelligent use of the technology that will develop, that *is* developing, but are handicapping our understanding of life as we live it and will live in the years to come.

In fact, science-fiction writers have been much more interested than architects in understanding future buildings and cities. This is tragic, for if there is one prediction we can make with absolute confidence it is this: the city of the future will be as different from the city of today as the nineteenth-century city was different from ancient Athens or Ur. It is even likely that before many centuries architecture, as we understand it, may have vanished.

When we think of architecture, of course, we think of "buildings" — inert shells enclosing space. But for a moment forget buildings and consider architecture as an exercise in problem solving. The practical, nonesthetic function of "architecture" is to provide a means of protecting or freeing man from the vagaries of nature and his fellow man: to provide him with light, warmth (or cold), to shelter him from wind and weather, to enable him to prepare his food and dispose of his wastes and to protect him from attack. Now these functions do not necessarily require a shell of solid inert material — or at least won't in the future. These problems were solved by building fixed, solid shells only because primitive men generally could solve them no other way.

This view of the ultimate aims of architecture raises two fascinating possibilities. First of all, if "buildings" are to remain with us, will they be buildings at all, as we think of them? Or might they be patterns of energy, or force fields, capable of efficiently doing all the things that clumsy cumbersome ground-rooted structures do so inefficiently today? Daniel Galouye's story. "City of Force," in *Galaxy*, speculates on what such an architecture might be: an architecture without walls or windows, roofs or doors, just changing patterns of energy.

Secondly, what would happen if every man could have his own compact, portable environment maker — say a combined utility core and flying belt? Two California architects, Mort and Eleanor Karp, speculate on this question in "The Life Pack" (*Landscape*, Winter 1965-66). In such a world buildings as we know them would serve no utilitarian purpose. Each man's Life Pack, strapped to his back, would furnish everything he needed for shelter, warmth, sanitation and transportation. So who would need buildings? In such a world, man would build buildings and cities only because he wanted to, not because he had to. It would be a world without houses, office buildings, or factories — only temples, or monuments, or great gathering places would be "built." Buildings as such would be scarce, but they would be what the greatest buildings of the past have always been — the magnificent results of man's need to fulfill his artistic and social needs — and, in the Karps' words, "To hell with plumbing."

END

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THE FIFTH COLUMBIAD

by RICHARD C. MEREDITH

Illustrated by CASTELLON

The killers from behind the stars had destroyed Earth. But they had missed a few Men — and would pay for that!

I

Our uncles have told us of ancient Earth, and if it were not so, they would not have told us. Earth was real and true, the true home of mankind, and it was taken from us. It shall not always be so. We shall find our Earth one day and make it green again.

— *Columbiad,* Book 1, ix

"We've been hit!" someone screamed.

For a moment the huge starship seemed to move sideways in space, to wobble, to shake like some large creature trying to throw off an unusually vile parasite. From a great distance, through decks and bulkheads and thinning air, came the screams of tearing metal, and through the radio came the screams of dying men.

Great tongues of flame shot through a dozen corridors, dissolving metal, paraglass and human flesh, scorching, searing, fusing, eat-

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ing into the entrails of the starship. Flames touched off an explosion, blasting through a dozen chambers, snuffing out half a hundred human lives. Thick, yellow gas escaped from tanks, boiling out of its melting containers, mixing with the rushing tongues of fire, finding naked metal, devouring it, and taking with it more human lives.

"Depressurize!" Duncan Travis yelled into the microphone inside his spacesuit helmet, knowing that even as he yelled the starship's precious cargo of air was rushing out a huge gaping wound into the vacuum of space, wondering how the flames continued to burn as the oxygen escaped.

Ten internal view screens showed carnage as the flame ate its destroying way through the wounded ship. One, then another of the screens went black as the destruction reached their sensors and dissolved them along with the decks and bulkheads and the fragile bipeds who moments before had been masters of the great vessel.

"Damage control!" Travis yelled into his throat mike, struggling to stand as erect as the artificial gravity of the bridge flickered, shifted, as the lights dimmed out to almost darkness and brightened again.

"Damage control reporting." The voice of Enge Conover came back through Travis's headset, a breathless, perhaps frightened voice.

"What the hell's happening?" Travis yelled, refusing to recognize his own emotions as fear. His eyes shifted from the internal screens to the larger displays of space outside the wounded starship, to a screen showing the ugly cigar-shape of the enemy war craft closing in for the kill.

"Laser amidships, Captain," Conover replied. "Broke through the force screen. The fire's under control now." The damage officer paused to catch his breath.

"How bad?" Travis asked, peering through the swirling smoke and thinning air at the scene of the huge Soarian warship, swinging in line, its firing tubes aimed toward the wounded ship, moments away from throwing missiles at her.

"Not fatal," Conover cried, then broke into a fit of coughing. "Not for a while, at least. Broke through Sector 20, destroyed a good dozen plate sections, and came too damned close to the nuclear generator. Too close, Captain."

"Is the generator damaged?" Travis asked quickly. Then, "Hold on, Conover."

Travis spun to watch the external screens as the wounded *Maggie's Anger* spit back her own retaliation. Nuclear missiles exploded from her firing tubes, broke through a momentary gap in the ship's defensive force screen, locked in on the enemy warship and bore toward her before the enemy was able to launch her own retaliatory missiles.

"Screen engineer, report!" Travis said into his throat mike.

"Second screen engineer Halmstead, Captain," came the almost instantaneous reply.

"How are the force screens, Halmstead?"

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"They'll hold, Captain, as long as the power lasts."

"What happened? How did that laser get through?"

"I don't know," Halmstead replied. "We'll find out."

"Don't let it happen again," Travis said.

At that moment the first missile from *Maggie's Anger* reached the enemy, touched the fringes of her protecting force screen, exploded. For an instant the blackness of space was lit by atomic flame, bathing the Soarian warship in brilliant radiation. Moments later two more missiles reached the screen, they too exploding harmlessly still over a kilometer from their destination.

Still more missiles from *Maggie's Anger* located the enemy starship, exploding one after another as they touched the field, pouring more and more megatons of energy into her field absorption units. The Soarian warship's force screen weakened, flickered ominously, then suddenly failed. A nuclear-tipped missile plunged through the gap, met headlong a laser beam from the craft and exploded half a kilometer from the starship. The spacecraft turned, twisted as the fireball reached out, grasped it. A second missile, rushing in through the flames, reached the enemy's hull and exploded. Then there was nothing left but fragments and dispersing gas.

Another external view screen showed a friendly warship sweeping in to assist the wounded *Maggie's Anger*.

We're safe, Travis thought, for a moment, at least.

Struggling to keep his footing as the artificial gravity flickered out for a moment, Travis spoke into the microphone again.

"Conover?"

"Still here."

"Now, what about the generator?"

"Damaged, but operational."

"How badly, dammit!"

"I'm not sure, Captain," Conover answered. "It'll take a while to check out."

"Then find out and report back."

"Captain," Mike Sartain said from the bridge's communications position, "High Captain Pallas has just radioed. He wants to talk to you."

"Okay," Travis said, now recognizing the assisting ship as the *Cobra II*, flagship of the Third Columbiad. "Put him on."

Somewhere Travis heard the arc of a relay closing, and then the deep booming voice of High Captain Jere Pallas: "Travis?"

"Yes, sir," Travis answered, looking up at the interior view screens, scenes of twisted metal and molten paraglas in now airless compartments and corridors.

"How badly are you hurt?" the High Captain asked.

"We don't know yet, sir," Travis answered. "It doesn't look good."

"It doesn't look good from here either." Pallas said. "I can see a gash in your hull that's at least ten meters long." Then he was silent for a moment. "Do you think you can Jump?" he asked after a while.

"I *think* so," Travis answered.

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"Okay," boomed the voice of old Jere Pallas, High Captain, temporal and spiritual leader, supreme judge and final authority of the Third Columbiad. "I believe we can hold them off long enough to Jump, all the gods of old Earth willing." There was a faint click as the High Captain switched another circuit into the network. "Get me all ships." There was still another click, louder, as a complete, eight-ship hook-up came into operation. "Attention all ships. We're going to get the hell out of here. Stand by for Jump coordinates."

For a few moments the radio was silent, save for the eternal conversation of the stars, the whispering, rushing sound that is the background music of the galaxy.

"Here they are," Pallas finally said. "Copy! Axis A, 321. Axis B, 42. Axis C, 509. Axis D, 21." Then he repeated the coordinates and waited for acknowledgments. "We will Jump in — one minute from my mark." He paused. "Mark!"

Eight ships replied to the mark.

Deep inside *Maggie's Anger,* as deep inside the seven other ships that made up the Third Columbiad, engineers and technicians frantically began to make adjustments, altering the shape, the size, the intensity of the Jump potential they had held in readiness for the High Captain's orders. Now they had less than a minute to do a twenty-minute job.

"Jump in forty-five seconds," said the voice of Jere Pallas.

A cold sweat broke out on Duncan Travis's forehead. Could eight ships synchronize themselves closely enough in what time there was? It was a gamble, but probably they'd make it, he thought.

Looking at the external view screens he knew that in a few seconds their defending force screen would go down, leaving them naked and open to the Soarian warships' weapons as long as they remained in normal space. This too was a gamble, but then gambling was the substance of life.

"Jump in thirty seconds," the High Captain's voice sounded in his headset. "Jump in fifteen seconds. Screens down."

The friendly, familiar flickering of the protecting force screen vanished, and Travis looked nakedly out into space. The alien warship, sensing the sudden defenselessness of the human vessels, swung to the attack, launching bundles of nuclear missiles, throwing laser beams toward the naked hulls.

"Jump in ten seconds."

An erratic laser beam swung through space, searching for the fleeing *Maggie's Anger.* A score of deadly missiles bore down on her.

"Jump in five seconds."

A new field sprang up around the starship, a green shimmering that grew to blot out the stars and the enemy war craft.

II

An invisible hand grabbed Travis's stomach, pulled savagely and twisted. A swirling fog came up to cover his eyes, and hammers began to pound violently inside his skull. In his momentary blindness

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he grabbed for something solid, but his gloved hands found nothing, and for an instant he was floating freely in that endless storm, a disembodied spirit in the hell between universes.

Then, as suddenly, reality returned, and with it the ship's artificial gravity. His feet found the deck, and he remained standing.

As the fog and pain dissolved, he saw that the external view screens showed only a dim, formless grayness. They were in that stillborn universe that made interstellar travel possible, Non-space.

His eyes quickly scanned the starship's bridge. No damage had been done there, but somehow there hung over the bridge the feeling of destruction, the sensation that something fatal had happened to the nerve center of the old *Maggie's Anger* and it wouldn't be long until she gave up the ghost.

Shaking his head angrily, Travis cursed himself. Such fatalism was unusual for him. Why this feeling of *Maggie's* death? They had patched her up before, and she had always gone back to kill more Sores. With a ten-meter gash in her hull, a good portion of her wiring out and her generator damaged? — asked a part of himself with which he seldom spoke. We'll do it this time, he replied. We'll do it this time. *Maggie* still has a lot of light-years to travel before she becomes a derelict. You're just getting old, Captain.

"We made it," Radar Officer Padgette Starr said, turning away from her now useless instruments and rising. She looked toward Travis and smiled.

"Yes, we made it," Travis said, releasing his breath in a great sigh, "and we can thank all the gods of old Earth for that. I had my doubts for a moment."

"I didn't think you'd ever admit it, ugly," Padge said affectionately.

Contacting the engine rooms, Travis asked, "How soon till breakout?"

"An hour and twenty-eight minutes," the voice in his headset replied. "We're not going far."

"Okay," Travis said, then had all stations report in, quickly assessing the damage done to the ship.

It was not a pleasant story he was told. *Maggie* was in trouble An accidental skirmish with the Soarian warships, totally unanticipated in this limb of the galaxy, had come very close to ending her life and the lives of her crew.

Air was returning to the bridge, and in a few minutes Travis was able to remove the helmet from his spacesuit. His first breath was filled with an oily, smoky odor, the smell a starship crewman associates with death.

"Are you all right?" Padge Starr asked, having removed her helmet and beginning to unsnap the clamps of the spacesuit itself.

"I'm okay," he said, turning toward Padge and smiling. A simple smile was the only luxury he allowed himself while on the bridge, the only sense of contact he permitted between hmself and his mistress while they were both on duty. Sometimes that was enough.

Padge smiled back at him, working her way out of her spacesuit.

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"Sartain," he said to the young communications officer, "call a meeting in the main galley in ten minutes. We might as well get everyone together and let them know how things look."

While Mikel Sartain nodded reply and bent to the intercom, Travis began to unsnap his own spacesuit and work out of it. There was no point in going to the meeting looking as if he didn't expect the ship to hold together, he thought. If she breaks down in Non-space, a spacesuit won't be much help anyway, that unpleasant part of his mind reminded him, but he ignored it.

In a few moments Travis's suit lay in a pile on the deck, and he stood dressed in what had become the uniform of the captain of *Maggie's Anger*: scarred, unpolished black boots, gray trousers with a black stripe running down each leg, a gray jacket with loose sleeves, collar and sleeve cuffs trimmed in black fur, a broad, ornate pistol belt, with two ancient blasters and a bowie knife; the whole costume topped off with a disreputable big, black beret that someone had given him the day he was elected captain. Travis felt comfortable in the costume, though so much clothing was unnecessary in the warmth of the starship. He was a big, unhandsome man, as rough looking as the people he commanded, and he knew that the militant grayness accentuated his masculinity. Duncan Travis was certainly not what one would call a vain man: Thoughts of vanity were as remote from him as were the once green hills of ancient Earth; but he knew that he must look the part of a starship's captain.

Padgette Starr, now also out of her spacesuit, felt no such compunction to look the part of an officer. She wanted to look like a woman, and did.

Her hair was cut short, as was the custom of her people, in what was at one time called a page-boy cut, and its darkness sparkled in the bridge's lighting, sharp against the whiteness of her skin. Her equally dark eyes twinkled back at Travis, and her full lips smiled at him. Her costume consisted of nothing more than a short skirt, heelless shoes and the pistol belt no Columbiad officer would ever go without. She was a tall girl, almost as tall as Travis, her body beautifully proportioned to her height. Though certainly not what would be called delicate, she was unusually attractive for the harsh people from whose stock she had sprung.

Travis looked at her for a moment, smiled inwardly, realizing that she was one of the few rewards he received for the terrible responsibility he held. Perhaps she was enough.

"Let's go," he said to the officers of the bridge, turning command over to his first mate.

III

Darkness is not to be feared, our uncles have told us, but to be cherished. Darkness is a place of silence, where dreams are born and children are conceived. Darkness is to

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be loved — and beyond the darkness are the stars, and beyond the stars, our Earth.

— *Columbiad,* Book I, cix

Something over half the starship's complement was in the main galley when Travis and his officers arrived. They all rose to their feet when he entered, their costumes and adornment a variegated sea of individuality, even in this a rebellion to the universe.

Travis quickly motioned them to sit back down, looking over the nine hundred-odd faces, men, women, children, who were before him. And he saw in their faces, even in those of the smallest children, a hardness, a resolution, an angry, bitter defiance that he had seen all his life, and that he still found somehow beautiful. These were the people of Columbiad, the people of his ship; with them behind him he could take on the universe.

The Eldest Elder rose from his seat of honor, pulled his white toga around him, and hobbled toward Travis on twisted legs, raising a withered hand in blessing.

Travis returned the gesture and stood silently, as was the custom, waiting for the Eldest Elder to speak.

The ancient man, how old Travis did not know, opened his toothless mouth, and his one remaining eye, still bright with intelligence and countless years of experience, sparkled. He raised his hand again, the robe of office hanging loose on his frail form, and motioned for silence.

"Hear the words of the scripture," the weak voice said. "Peace will come on wings of darkness; peace will come to our children, but not to our age. Pray not for peace, for it is not yours." The old man paused. "So says the Columbiad." Then he nodded to Travis and hobbled back to his seat.

"Conover," Travis said loudly. "Is he here?"

"Coming," was the reply as a spacesuited figure entered the far end of the galley, his suit covered with soot, smoke stains and grease.

"Come on up here and give us a rundown," Travis told him, motioning him to the stage where the officers stood.

Without preamble, Conover began to describe the nature and extent of *Maggie's* injuries.

"If there's still a question in anyone's mind," the ruddy-faced, sandy-haired damage control officer said, "we took a laser beam in the starboard side, Sector 20. There's a big hole there now, but the section is sealed off, and everyone in there is still in spacesuits. The nuclear generator took a hell of beating. I mean, it's in bad shape, and I wouldn't want to promise anyone how long it'll hold out."

"What about the Jump units?" asked a bearded young man in brown shorts, an almost frightened sound in his voice. Travis recognized the youth as Roger Bream, whose brown shorts designated membership in a faction calling themselves "Settlers" and preaching what Travis believed to be a cowardly philosophy.

"If you mean the Jump units

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themselves," Conover said, "I don't think there's anything wrong with them. They're a long way from the damaged area. But if you mean is there power enough to break out at the proper coordinates, and I think that's probably what you're getting at, Bream — well, all I can say is I *think* we've got the power to do it. But I'm not absolutely sure and neither is anyone else."

Starting with the face of bearded Roger Bream and spreading like ripples from a rock thrown into a planet-side lake, Travis saw an expression come over the faces of the people before him, something that was rarely seen on the faces of his people, that something that might have been fear. They knew what Bream was getting at, and they knew what Conover meant he thought they could avoid: power failure and the possibility of breaking out of Non-space at random, at some unplanned spot in the real universe. The randomness of the topological fantasy known as Non-space being what it was, an accidental break-out could lead them to a spot near their intended destination, or perhaps a spot megalight-years away, in another galaxy, or more likely, in the infinite nothingness of intergalactic space. They knew it could happen, and it frightened them.

"Okay," Travis said in a loud voice, one that he hoped would sound above their fears. "If Enge Conover says he thinks we'll make it, we'll make it. We'll get back into normal space right where we want. That's the least of our worries.

"This is the way it stands," he said slowly, softer. "Our generator is on its last leg. We'll probably make it to coordinates, but after that its anybody's guess. We have better than a ten-meter gash in the hull, but we can patch that, given time. A lot of our wiring and a good number of compartments are destroyed. Several of the storage chambers were hit, and hydroponics was pretty well knocked out." A gasp went up from the group. "We've got food supplies for a while," Travis went on, "but the gardens have had it. We'll have to get help from other ships. But that's minor at this point. We've lost maybe seventy-five dead and we've got several dozen in sick bay, some of them pretty badly hurt."

He stopped and looked at the sea of faces before him.

"We're hurt," he said. "We're hurt badly. But we aren't dead and we'll give the Sores a good fight before it's over."

Travis looked again over the faces of those before him, and in them he saw anger and bitterness and traces of the thing he did not want to call by the name of fear. These were a strange people, he knew, a bitter, almost savage people, and with good reason. They called themselves barbarians, a joke they half knew was true. Their children ran naked through the long corridors of their starships, laughing, erotic little hellions who only half remembered the name of their long dead home world. And they themselves, the

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fragile, almost hairless bipeds who commanded the metal behemoths that ranged through the stars, seeking death and giving it, what of them? Of morality, they had little. "Do not take a human life. Care for thy sister's children. And above all else, survive." Marriage was a custom they had centuries before abandoned. Love was an idea that had little place in their harsh struggle for survival. Of the complex rituals and involved codes of a more settled culture, they had little. Their ethic read: Obey the elected captain and survive.

The Eldest Elder had come to his feet while Travis spoke and motioned for the captain's attention.

"May I use your microphone?" the old man asked, hobbling toward the stage where Travis stood.

"Certainly, Uncle," Travis said, stepping back to allow the old man room.

The Eldest Elder cleared his throat and then spoke in a surprisingly loud voice.

"This is no time for a history lesson, but that may be what we all need, some reminder of who we are, we who call ourselves Columbians, and what we are doing here. May I, Captain?"

"Please do, Uncle," Travis said generously.

"Before I begin, I would like to say one thing," the old man said, his voice growing stronger as he spoke. "Duncan Travis here is your captain. And you'll never find a better one. The Council of Elders elected him unanimously when old Captain Blacker died, the gods of Earth rest his soul, and he has never once caused us to regret our decision. Trust him, my children. He will see us through."

Travis, stunned and embarrassed by the Elder's praise, felt a warmth creeping up his cheeks. For the first time in twenty years he blushed.

"How long ago was Earth destroyed?" the Eldest Elder cried in a voice that needed no artificial amplification.

"Seven hundred and thirty-five years ago, Uncle," a naked, red-haired boy of about ten answered.

"That is right, young one," the Eldest Elder replied. "This child who has not even reached puberty knows what many of you adults do not seem to remember. Seven hundred and thirty-five years, three months and, ah, eighteen days ago our Earth was *destroyed*. That is a long time to keep a grudge, is it not?

"We have heard some of you say those very words. Like young Mr. Bream there. Is that not right, Mr. Bream? Would you not find some pleasant world not unlike our dead Earth where we can hide from our enemy and spend our days fondling the girls and making love to them? Don't you say we should forget our heritage and what was done to our ancestors?"

Roger Bream, the bearded young man in brown shorts, slowly came to his feet.

"That's partly right, Uncle. All of us 'Settlers' think that it's futile to try to fight the Sores this way. We can't do anything to bring back Earth, Uncle, so what's the use?"

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"Perhaps one day Earth can be brought back;" the Eldest Elder said, his withered hand held high in the air. "But that is not the point. Let me tell you what the point is.

"Seven hundred and thirty-five years ago the Soar th'Dawnt, the Daughter of th'Dawnt, the Sores we call them, made a sneak attack on the solar system. They wiped out our Earth, completely destroyed *all* life there, and systematically obliterated every human colony. They did an excellent job of it, my children, except that they overlooked four new starships that were exploring outside of the solar system, and that was their fatal mistake.

"But why did they destroy Earth, these aliens whose existence had never been suspected by mankind? Because they *thought* that Man was a race with whom they had waged a war God alone knows how many centuries ago. The Beasts of the Pillar, they called us and bent all the power of their empire to the total destruction of mankind. It was a ghastly mistake, but one for which they must pay.

"Four starships escaped the destruction. We do not know what became of three of them. Perhaps some day we will, but all we know now is that they returned to find Earth desolated, and together they went back to the stars. They are somewhere out there, their descendants, and someday we will find them. And with them we will finally and forever erase the evil empire of the bastardly spawn of the swamp of th'Dawnt.

"And as for the fourth ship, the *Cristoforo Colombo,* she came back late and missed the others, but she learned the story of the rape of Earth and of the other starships, and she too went out to find who had destroyed her home and why. And when that happened the first Columbiad was born.

"Now, over seven hundred years later, where are we, my children?" the Eldest Elder asked, looking into the faces before him. "That one ship is now four full Columbiads, four times eight warships stolen from our enemy and converted for our use. Our four Columbiads are now moving through the stars, striking, raiding, plundering, doing what damage we can to the enemy, giving what hope we can to her slaves.

"There is something else that is just as important. We are seeding the stars with our own kind. From our loins we are rebuilding the human race," the Eldest Elder said slowly. "On how many worlds have we set down colonies? No one knows. At least a thousand I am told. Think of it, children, a thousand worlds inhabited by humans. They do not amount to very much, each of them. Not now. Not yet. Perhaps half of them will die out or revert to barbarism, and the Sores will find some of them and wipe them out. But the Sores cannot search every world in the galaxy. Some will survive and grow and eventually come back to the stars to join us and help us destroy the monsters who destroyed our Earth.

"Now we must survive, children.

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Survive! For seven centuries that has been our one law, our one ethic, our one morality. Survival. All else is secondary to that one fact. We must, and we shall, survive.

"Remember that my children," the Eldest Elder said, speaking the words slowly. "When you rise up, remember that. As you eat, remember that. As you work, remember that. As you make love, remember that. As you sleep, remember that. We shall survive. The Columbiad will not let us down. When we return to normal space, there will be seven ships filled with our brothers and sisters at our side. They will help us."

The Eldest Elder nodded his thanks to Travis, turned and hobbled back to his seat, a broken fragment of a man, yet still filled with the fire and courage and hatred that had kept his kind alive for seven long, terrible centuries.

"Go back to your posts," Travis told them. "We'll be breaking-out soon."

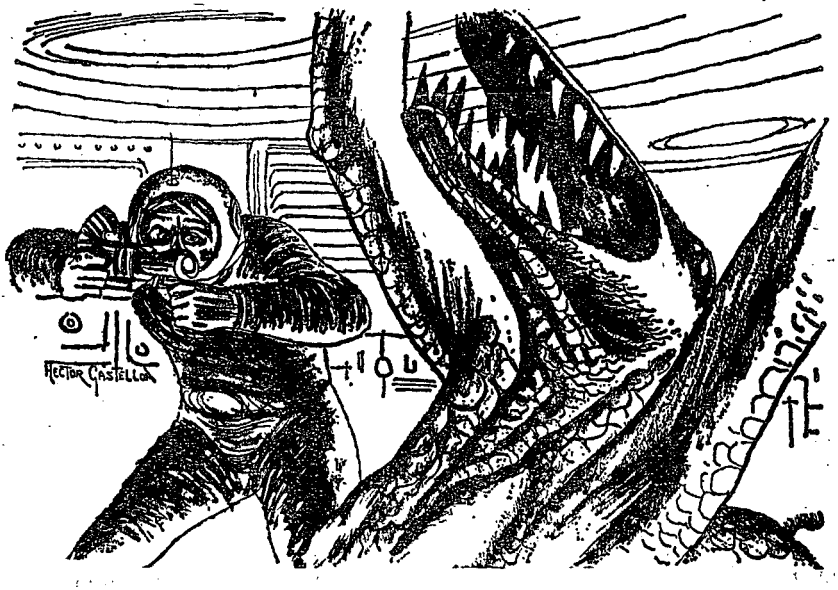
Silently he thanked the Eldest Elder — for everything.

IV

"Break-out in one minute."

The bridge was strangely quiet as the sweep second hand of the large chronometer began its final cycle of the clock's face, as the moment of break-out approached.

Travis felt a cold sweat forming on his forehead and reached up to wipe it away before he remembered that he was in his spacesuit. His gloved hand touched the transparent



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helmet, and for a moment he felt foolish.

"Conover," he said into his throat mike as the chronometer's second hand dipped toward the half-minute mark.

"Here, Captain," the damage control officer's voice came back. "I'm in the generator room."

"How does it look?"

"We'll make it," Conover said, a smile in his voice. "They've got a few problems here. A group of coils are beginning to overheat, but they'll last a while longer."

"And then?" Travis asked.

"I'd be afraid to say. I don't think we'd have time to even try to patch her up before the Sores catch up with us. *Maggie's* hurt, Captain, and it would take a long time to repair her. Too long."

For an instant Travis had a fleeting vision of *Maggie's* sitting powerless in space while a dozen Soarian warships swept down to destroy her. Without power she would be totally helpless. One missile would be sufficient.

He looked back at the chronometer and saw the sweep hand rising toward 00:00.

"Break-out in five seconds," he said into his throat mike, his voice echoing throughout the ship, bouncing down now deserted corridors, sounding in quarters where women clutched their naked children to their breasts, being heard by space-suited men in their helmet headsets as they paused in their work of trying to keep the wounded starship alive, being heard in dark compartments where young couples made passionate love to drive the fear from their minds. The fifteen hundred sets of lungs inhaled; fifteen hundreds hearts counted off the seconds; fifteen hundred minds waited.

The longest five seconds of Duncan Travis's life slowly slipped past.

The lights of the bridge flickered, went out, and Travis was plunged into unfathomable darkness, into bodiless weightlessness. Again that savage hand gripped his stomach, tore at his loins, pulled, twisted. All the terrible sensations of shifting from one universe to another tore at him. Then it was over and light returned to the bridge. Artificial gravity replaced weightlessness, and scenes of normal, star-flecked space appeared on the view screens.

"Get me H.C.," Travis yelled to Mikel Sartain. "Now!"

Suddenly the bridge lights flickered, dimmed, almost went out, then slowly came back up, almost to normal.

"Conover?" Travis yelled.

"She's going, Captain," Conover's voice replied. "The boys are doing their damnedest, but getting power to break-out was just too much."

"Do what you can."

"High Captain Pallas, Captain," the communications officer said.

"Travis?" Pallas' voice boomed a moment later.

"We're in bad shape, sir," Travis told him at once. "Our generator's about to go."

"Thank God you made it out with us," Pallas said under his breath. "Abandon her, Travis. We'll come in to get you."

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Abandon! Travis had refused to admit to himself that they would have to abandon the old *Maggie*. He had not been willing to speak that word himself, but now Pallas had done it for him.

Memories came up in rebellion, screaming to him that he could not leave the ship. Images of his eldest uncle who had been second mate appeared. Travis himself had been born aboard her just a few months after her capture, before she was even fully converted for humans. He had spent a lifetime on her. He could not leave her now. He could not give her back to the Sores.

"I can't sir," he answered slowly.

"What the hell do you mean, Captain?" Pallas yelled. "That's an order. Abandon ship!"

"No, sir," Travis said. "I mean, I won't leave her."

"After we've shaken the Sores we'll come back for her, Duncan," Pallas said. "I know how you feel. An officer never wants to abandon his ship, but the Sores'll blast you all the way back to Earth if they find you there."

"I'll give the orders, sir," Travis said. "I'll get the crew off, but I won't leave."

"What the hell do you think you can accomplish?" Pallas asked. "You know as well as I do that one human life is worth more than that ship now. We're spread too thin. There aren't enough of us. And, Duncan, you're too valuable a man to die for no good reason."

Travis, remembering the speech the Eldest Elder had given them, thought of survival. That was the most important thing. Stay alive. Come back to fight again.

"Captain," he said slowly, "if they think *Maggie's* a derelict they won't destroy her."

"Not likely," Pallas agreed. "They'll want to salvage her themselves".

"The Columbiad will need another ship."

"What are you getting at, Travis?"

"Let me take a dozen men, sir," he answered slowly, "and I'll give you another ship."

"Duncan," Pallas said after a long pause, "you really mean to go through with this, don't you?"

"Yes, sir," Travis said into the microphone.

"What would you do if I sent men in there to get you?"

"I'd resist, sir. I've made up my mind. I won't allow myself to become a captain without a ship."

"Okay," Pallas answered slowly. "I rather expected this, Duncan. I think I would have been disappointed in you if you had given up your ship. What do you have in mind doing?"

"I don't believe I have time to explain it now, sir," Travis said, not willing to admit to the High Captain that at that moment he really had no plan formed, nothing but the intention of stealing another ship from the Sores, somehow, and bringing it back to the Columbiad, it and the wounded *Maggie's Anger*, if he could.

"Good luck, Duncan," Pallas said.

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Then, after a pause, "We'll maneuver in and start picking up your people. As soon as we get everyone off, we're going to get as far as we can from this place."

"I understand, sir," Travis replied.

"Duncan, in six months we'll return to Meeting Place," Pallas said, referring to the dead world of a red dwarf star. "We'll expect to meet you there."

"We'll be there, sir," Travis told him, crossing his fingers and hoping he could live up to his words. "Over and out."

Almost instantly Travis stepped to the communication position and broke the radio connection with the High Captain. The lights of the bridge flickered as he switched back to internal communications.

"Gonover?"

"Here."

"How long?"

"Not much longer, Captain. Maybe fifteen minutes. Maybe less."

Switching to public address, Travis spoke again.

"Attention everyone. This is the captain. We've had it. We may have fifteen minutes to abandon. Get the hell to the nearest airlock and prepare to be picked up. Everyone! Get the sick and wounded in spacesuits and carry them out. I repeat, get the hell out of here. It won't take the Sores long to find us, and when they do, *Maggie*'ll be a sitting duck for them. The Council of Elders will handle disembarkation."

The thought that the starship's crew might panic and run screaming blindly toward the nearest airlock never entered Travis's mind. Seven centuries of struggle to stay alive in a hostile universe had bred a core of hardness into the human race. They would get out, every one of them, and probably in the fifteen minutes he had given them.

"One more point," he added quickly. "I want eleven volunteers. I don't want anyone with a family or responsibilities. We're going to stay on *Maggie* and see if we can capture another ship. The first eleven who come to the bridge will be the ones I'll take. The rest of you get out. Now, *go!*"

Cutting off the communicator, Travis turned to the bridge.

"All right," he said to the officers, "most of you have nieces and nephews, get them and get to an airlock."

"I think I'll stay," Mikel Sartain said, looking up from his communication position.

"You're an uncle, aren't you?" Travis asked. "I want men without families."

"I've got three nieces and a nephew," Sartain said, "but I have a younger brother who can take my place with them. I'd rather stay."

"You're a free agent," Travis said, "and I'm glad to have you."

"I'll stay too," Padge Starr said, looking up at Travis and smiling. "I'm certainly no uncle."

"Get the hell out of here, Padge," he said. "This is no place for you."

"Because I'm a woman?" she asked. "I can do anything any man on this ship can do," she added angrily.

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"And some things they can't," Travis said, smiling, "but I don't want you in this."

"I'm staying, Duncan," she said slowly, cold steel in her voice. "Remember what would have happened to the old *Colombo* if Ruth Wilson hadn't stayed with her man."

"I don't need scripture, Padge," Travis said.

"I'm staying," she repeated.

As if to underline her words, the power of the bridge dropped again, plunging the room into semidarkness.

By this time the other officers had vanished from the bridge, to be replaced by sandy-haired and grimy Enge Conover.

"I was hoping you'd come," Travis said.

"You knew I would," Conover answered.

Behind him came bearded Roger Bream, the youth who had wanted to give up the fight and find some peaceful planet where they could forget the Sores.

"What do you want?" Travis asked him.

"You wanted volunteers," Bream said. "I'm one."

"You?"

"Captain," Bream said, "maybe I don't agree with you and the Elders, but that doesn't make me a fool and a coward. The Eldest Elder implied that, and I don't want people to think it. There's not a girl on the ship who'd have anything to do with me if they thought that."

"Bream, this is no stunt to improve your sex life," Travis said. "We're going to try to steal a ship from the Sores. We'll probably all be killed. Think how that'll affect your bedroom games!"

"I know," Bream said, "but I'd like to be in on it. I don't like the Sores any more than you do. I just don't agree with your methods."

"And if we come out of it," Conover interjected, "there won't be a girl in the Columbiad who'll turn you down. Isn't that right, Bream?"

"Well . . ." Bream began.

"I wouldn't say that, Enge," Padge said. "There are some girls who'd turn him down if he were High Captain."

"Stay out of this," Travis snapped. "I don't know what your motives are, Bream. Conover's probably right, but if you'll obey orders, you can come."

"Yes, sir."

By the time this conversation had ended, big maintenance crewman Fargo Colen, astrogator Jack Ivster and blonde assistant chief gardener Muse Hunter had entered the bridge.

"Another woman," Travis said half to himself as Muse entered, but he knew that there was no point in arguing. Women of the Columbiad had had equal rights with men for a long, long time . . . the equal right of death in a thousand hideous fashions.

"Before another minute had passed, four more persons had come onto the bridge, the final one being gunnery officer Maryb Pharr, the third woman to join the party.

"That's enough," Travis said when Maryb closed the hatch behind her. "These are degenerate times if

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twelve of us can't take over a Sore warship. Now, everyone come up here. We've got a lot to do and very little time to do it in."

V

Our strength is not in our numbers, for in numbers we are weak, but in our will we are strong. It is our will that shall give us victory and peace.

—*Columbiad,* Book II, xx

When the eight Columbiad starships had matched Jump potential and leaped away from the scene of the battle with the warships of Soar th'Dawnt, the aliens had trained myriads of instruments on the Jump field forming around the human ships, instruments that measured the size, the shape, the intensity of the field, instruments that told them, in approximate terms, how far through unreality of Non-space the humans would leap, told them, in rough figures, at what point in the galaxy the "Beasts of the Pillar" would break back into normal space. As soon as their instruments had digested that information, the Sores had begun to calibrate their own Jump drives, to set their units to leap into Non-space and then break back out into normal space as close to the break-out point of the humans as possible.

Immediately following their own break-out, the Sores would begin a search of space, instruments scanning the starless depths for the location of the eight ships, regularly shaped metallic objects that would be the spaceships of the enemy. When they did, however, they would find not eight ships, but one sitting dead and motionless, without power and seven speeding away at maximum acceleration. The Sores would give chase, of course, but they would leave one ship behind to investigate the derelict.

At least that was what Duncan Travis was counting on.

Travis held himself in place by hooking his legs under a handrail. The nine others in the small compartment kept themselves from drifting in free fall in similar fashions. Twelve large packs of equipment and supplies were tethered near them with rope, looking like a bunch of irregularly shaped balloons.

"Colen, you're in charge of the cutting/welding laser," Travis was telling the husky maintenance man. "You probably know how to handle it better than anyone else."

"Thank you, Captain," Fargo Colen answered, his rough voice almost sparkling with delight.

"It'll be your job to get us into the Soarian ship," Travis said, "and do it without setting off every alarm they have.

"Once we get into the ship," he went on, addressing the others, "we'll have to find a hiding place and then work out our plans in detail.

"Each of us will carry a blaster, by the way, and I'd like each of us to take a laser rifle, but that may be impossible with all the other equipment we've got. Do your best.

"Conover," he said loudly into the microphone in his helmet.

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"Here," the damage control officer's voice came through his headset.

"What's it look like out there?"

"Nothing yet," Conover answered. He and a young crewman named Delk Reuben sat on the starship's outer hull, scanning space with portable detection equipment, searching for the arrival of the Soarian starships.

At the moment Reuben spoke: "Look over there, Mr. Conover. To your left, about 50° up."

For a few moments there was silence.

"I see it," Conover said. "They're here, Captain."

"How many?"

"Can't be sure," Conover answered. "This portable stuff isn't the most accurate gear in the universe. Probably the whole fleet."

"They'll make a quick pass," Travis said. "Probably hit us with a laser or two to see if we react. When we don't, I imagine they'll go on after the others and leave one ship here to investigate. That one's ours."

"I hope they leave us a good one," Padge Starr said.

"I do too," Travis replied. Then, to the men on the hull: "You'd better get back in here before they get too close. Remember, their detection equipment is a lot more sensative than yours."

"Roger," Conover answered. "We'll be in in a couple of shakes."

Ten minutes later Conover and Reuben joined the others in the small compartment.

"Okay, we'll sit tight for a while, let them beam us once or twice to see if we fight back," Travis said. "Then they'll send a boarding party. That's when we'll have to do our damnedest to get into their ship. Everyone understand?"

Eleven voices acknowledged, then lapsed into silence.

"Anybody got any ideas how we can pass the time?" Padge asked, after a while.

"Well, there are just three girls," Roger Bream said, "but we could draw straws."

"That's enough!" Padge said. "You'll have all the bed mates you can handle if we pull this off."

"Yeah, I know," Bream said smiling. "I'll have my own private orgy every night. But what if we don't? You wouldn't want me to die without having at least one little tussle with you, would you?"

"That question isn't even worth answering," Padge said, turning away from him.

Travis ignored them and sat back, watching the hands of his watch slowly creep around, and waited and tried not to think too much about what he had gotten himself and the others into.

After a while Padge joined him, hooking her legs under the same handrail and pressing her space-suited body against his. Travis put his arm around her shoulder and pulled her as close to him as their garments would allow and thought about what she meant to him. He did not speak, but images rose into his mind of the nights they had spent since she had come to live in his cabin, of the wild, passionate

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love making, of the quiet moments afterwards, in those minutes before sleep came, when he lay in the darkness feeling the warmth of her body next to his, knowing what it was the ancients meant when they spoke of love and wondering if those nights would ever come again.

Time passed and finally what Travis expected took place. A strangled metallic roar came vibrating through the decks. A few moments later there was a detectable rise in the temperature of the metal bulkheads of the compartment.

"Laser," Travis said half aloud.

There was silence for a while longer until Travis spoke again.

"Now that they're sure *Maggie's* a derelict, they'll send in a boarding party. Sit tight and wait. It won't be long now."

It seemed much longer than it was, the time between the laser beam and the violent shaking that tore through the ship, the tremendous clanging that rang in the bulkheads and decks.

"This is it!" Travis said. "They're grappling. Hold on."

Three times more the little compartment was shaken violently, throwing supplies and equipment around, the twelve holding on to what they could.

Then silence again.

"Okay," Travis said breathlessly. "They've coupled with us. Now they'll send a boarding party over to check things out. We'll wait half an hour, then see what we can do. Radio silence from here on out."

His companions responded with silently exchanged glances. Now the chips were down. They *had* to steal the Soarian ship.

VI

Let us not cry for peace, for peace is not ours, nor shall it be until the blood of our ancestors is given vengeance. Peace shall come, but not to our age. Therefore let us not cry for peace, but for war, for only war shall bring us peace.

— *Columbiad* Book II, xxix

Even though the nearest star was over a light-year away, Travis felt naked and exposed as he clambered across the hull of the Soarian starship. Light from the myriad stars that made up the tightly clumped hub of the galaxy reflected back from the scarred metal, outlining the figures of the eleven spacesuited Columbians who followed him, all hooked together by a thin cable, carefully lifting and lowering their magnetic-soled boots so that no sound reached the ship's occupants.

Stopping near the large blister-shape of the lifeboat pod, Travis glanced back over his shoulder and motioned for the others to come closer to him. Beyond the spacesuited figures, beyond the curve of the spaceship's hull, he could see a portion of *Maggie's Anger* where she lay coupled with the alien ship. Then he signalled for the others to gather closer.

He looked around for Fargo Colen and recognized the big maintenance crewman by the huge cutting laser he carried. He motioned for Colen to come near him.

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Kneeling, Travis drew a circle on the ship's hull with his finger, indicating that Colen should cut a meter-wide disk out of the metal.

The maintenance man understood, nodding his helmeted head.

Travis wished it were safe to use the suit radios, but he knew that the Sore would be monitoring every radio frequency. Hand signals would have to do until they got inside the ship and could converse normally.

Holding the huge laser at hip level, pointed downward. Colen turned it on, adjusted a few controls, and began cutting through the thick metal of the hull. In a few moments he had a meter-wide disk of the metal cut loose, and Mikel Sartain and Enge Conover carefully lifted it out and lashed it to the hull.

Turning off the laser, Colen looked toward Travis, as if to ask what to do next. Travis shook his head, indicating that he did not wish Colen to cut through the inner hull — and risk tripping meteor-detection devices.

Travis peered into the opening, flashing a small torch, and saw that there was just barely enough room between the hulls for a spacesuited man to crawl. Lowering himself into the hole, he motioned for Colen to follow him, but for the others to stay.

Leading Colen, Travis crawled between the hulls to where the lifeboat blister intersected them, going down into the body of the ship itself. He motioned for Colen to cut another hole through the bulkhead before them into the lifeboat compartment.

A few moments later the laser had cut through and into the compartment that housed the alien escape craft. Travis peered in, saw no signs of life or recent occupation, and then sent Colen back for the others.

When Conover arrived, Travis motioned for him to lead the way into the compartment, which was almost wholly filled with the emergency vehicle, leaving them only room enough to go single file to the airlock that led into the ship itself. It was now Conover's job to disengage the sensors on the airlock that would tell the starship's bridge that it was being operated. This job took Conover a little over ten minutes to complete. Then he motioned Travis to join him.

Together the two men stepped into the broad, low airlock, began its cycle and waited for it to fill with air. The skull-like grin on Conover's face showed even through his helmet as the cycle ended and the inner hatch clicked free.

Travis put his hand on Conover's chest, holding him back, and drew his blaster with the other. Then he caught his breath, slowly pushed the hatch fully open and carefully stepped into the corridor outside the airlock. It was empty.

We made it, he said to himself, smiling and releasing his breath, this far at least. He scanned the corridor in both directions quickly and saw nothing that he had not expected to see. He felt the unpleasant but bearable tug of 1.3 G's that was normal gravity for the Sores. It might hamper the humans some.

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"Go get them," he said, turning back to Conover who stood in the open hatch. He knew that the damage control officer would not understand his words, but would guess at their meaning.

Conover nodded understanding and closed the airlock, leaving Travis standing alone in the corridor of the alien vessel.

While he waited, bent slightly so that his head would not bump against the low ceiling, Travis unsnapped the clamps of his spacesuit helmet and allowed the ship's air to seep in. The air was thick with the odor of decay, and for the briefest of instants he thought he was going to be sick. He had smelled Soarian air before; it was breathable, if unpleasant, heavy with the fetid odor of swamp and rot that reminded them of their home world.

The lights that lined the corridor were dim and red, matching the lights of the sun of th' Dawnte. Travis could see well enough in that light, but knew that after a while it would begin to give him headaches. That's the least of our worries, he told himself.

He took another breath of the thick, warm, moist air and waited for the others to join him.

Soon, two by two, they came through the airlock that had been built for creatures much shorter and broader than were humans. In a few moments all twelve stood in the corridor, loosening their helmets, drawing their weapons.

"Where are we, exactly?" Conover asked.

"We ain't far from the cargo areas," Fargo Colen volunteered, "the way I figure it."

"I think that's right," Travis said. "That's the way I had it planned. Want to lead the way, Colen?"

Looking around for a moment to orient himself, the maintenance man swelled his chest and started forward, leading the small party.

"Stay close," Travis whispered, "and remember, even if you can't see well in this light, the Sores can."

They had not gone more than a few meters when Colen halted them before an unusually large hatch upon which were inscribed seven or eight characters of the Soarian alphabet.

"This ought to lead into one of the cargo compartments," he said.

Travis and Conover bracketed the hatch with drawn weapons while Colen opened it, kicking it inward. It was exactly what they had expected, a large cargo compartment, half filled with cartons of supplies and equipment.

"This is good enough," Travis said. "Let's take it."

In a few minutes the twelve Columbians had located themselves in a remote, sheltered corner of the large chambers and had begun taking off the heavy packs they wore.

"Earth, it's hot in here," Padgette said as she began to unsnap the clamps of her spacesuit.

"They like it that way," commented Roger Bream.

"It must be nearly 40° C. in here," Mikel Sartain said. "Maybe more."

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"And humid as hell," Conover added.

"That's what's going to give us trouble," Travis told them. "More than the heat will. We might as well get out of these spacesuits. They don't do us any good right now, and probably will hamper us if we have to do any fast moving."

The twelve began to shuck the cumbersome suits.

"We'd better get down to as little clothing as possible," Travis said.

"How little, captain?" Roger Bream asked.

"Exercise a little modesty, at least," Travis said, pulling off his own suit. "We're all adults, and that works both ways."

Padge was already out of her suit, now dressed in the brief costume she had been wearing on the starship: short skirt, gun belt and shoes.

"Do you have anything on under that skirt?" Travis asked.

"Yes," she answered finally.

"What?" he asked.

After another pause she lifted her skirt to reveal black panties of a heavy, glossy material, totally opaque. Many women on *Maggie* would have considered that sufficient clothing, modesty being one of the many virtues that mankind had nearly lost in the close confines of starship life.

"Those'll do," Travis said, looking straight into her eyes. "Get rid of the skirt, but keep the pistol belt. I want everyone else to do likewise. And, no shoes. The deck's warm, but not too hot, and shoes could make noise."

To reinforce his words, Travis quickly stripped to his own briefs, kicking the rest of his clothing into a pile.

"Captain," petite Maryb Pharr said, having removed her spacesuit, revealing a modest jumpsuit, "I don't have anything on under *my* clothing."

Travis sighed disgustedly. "Then take something and make a loin cloth out of it. You'd burn up in that outfit, but we can't go around totally naked."

"Why not?" Roger Bream said, a wicked gleam in his eyes.

"There are certain limits beyond which civilized women will not go in public," Padge said haughtily.

"If you come out of this alive, Bream, you can have all the naked woman you want parading in front of you," Travis said angrily. "Anyone else without underclothing, do the same as Maryb."

Maryb Pharr went off into the piles of cartons to undress and wrap a fragment of her jumpsuit around her hips. A moment later Delk Reuben and Jack Ivster went off in other directions to do the same.

Bream smiled broadly when Maryb stepped back into the circle of light created by Conover's torch, dressed in a strip of her jumpsuit, tied at her right hip, and which just barely achieved its purpose. The petite gunnery officer was a much more attractive and well endowed woman than anyone had ever suspected.

"Well?" she said angrily, starring down Roger Bream who suddenly blushed and turned away.

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"What's your plan?" Conover suddenly asked Travis.

"It's pretty simple," Travis answered, taking his cut. He knelt on the deck and indicated for the others to do the same. "I got the idea from what happened to *Maggie*. We'll wait until the Sores get underway, but not long enough for them to catch up with their other ships. Then we'll wreck *their* nuclear generator, but not so badly that we can't fix it when we have control of the ship."

"What's that going to accomplish?" Bream asked.

"Plenty!" Conover said loudly.

"Not so loud," Travis commanded. "There are several things I want us to do before power fails, like be ready to blast open their airlocks. We can wipe out most of the Sores in one blow if we let the ship's air escape."

"Captain, can I say somethin'?" Fargo Colen asked.

"Go on," Travis replied.

"Look, Captain, when the power goes out, the seals will close the ship off in sections all by themselves, won't they? I mean, there are things to keep *all* the air from gettin' out."

"That's right," Travis agreed. "The ship'll seal itself off in four sections. We all know that. What we'll have to do is make sure those seals don't work. We'll want every bit of air in the ship to escape just as soon as the power fails. That will totally disable the ship and kill every Sore who isn't spacesuited."

"What about the ones who are?" Mikel Sartain asked.

"That'll be up to us," Travis told him.

"All right, this is it briefly: one, we'll send Conover back into the space between the hulls to plant explosive charges at as many places as he can. He'll use the grenades we brought to blow holes through both hulls. They'll have to be large enough so that the automatic equipment can't patch them at once. Two, we'll find some way to jam the automatic seals. Three, we'll raid the nuclear generator plant and put it out of operation. At the same time we'll disable their communications gear so that it can't be operated, even on emergency power. We don't want them to be able to call for help. Finally, we track down the Sores in spacesuits, if they haven't already found us, and have it out with them.

"Anyone got anything to add?"

"What about the alternate command post?" Mikel Sartain asked.

"We'll have to watch for that too," Travis said. "As you all know," he explained, "each Soarian warship has a 'spare bridge,' you might call it, located toward the stern of the ship. Except in actual combat it's usually unmanned. At least, that's what I've been told. Without power that spare won't be any more useful than the real bridge, except for its radio gear. As soon as we have things in hand we'll have to occupy it too."

"I don't like it," Bream said.

"Shut up!" Conover snapped.

"If you've got anything constructive to add, say it," Travis told him. "If not, let's get started."

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"It sounds good to me," Conover said. "I mean, I can't think of anything better."

"What are our chances of success?" Padge asked slowly.

"One in five, maybe," Travis answered calmly. "The hardest part will be after the power goes out. Before that the Sores won't even know we're here. Afterwards, well — " He paused. "Things will be pretty rough for a while."

VII

There was a long, empty silence before he spoke again.

"Anyone else?" When there was no answer, Travis pulled a set of charts from a pack and spread them out on the deck in the light of the torch.

"These are *Maggie's* plans," he said, "but I think they're enough like this ship for us to get by.

"Okay, these are the automatic seals," he said, indicating three huge sliding panels with his finger. "They're spring operated."

"Damn big springs, too," Colen added.

"As long as the ship has air and power, the seals are held in place. But once power fails or the ship depressurizes, these bars slide back, spring operated too, and the seals go in place. The easiest thing to do would be to make sure the bars don't slide back."

"I figure we could jam 'em pretty easy," Fargo Colen said. "I fooled around with *Maggie's* seals some, and I think I know how to do it."

"Okay, then," Travis said, "you can have Bream and Reuben to help you."

"I'll need 'em," Colen said.

"Now," Travis went on, "I'll let Conover have the explosives. He can plant them where they'll do the most damage."

Conover winced.

"But I want the actual detonating of them given to someone else. You can handle that, Padge. I want Conover with me when we raid the power plant."

"You said we'd have to disable their radios," Sartain said.

"Right," Travis told him. "That's your job. Take Winans and Muse Hunter with you. They can both handle guns, and you'll probably need them.

Now, there are two communications centers, like Sartain mentioned earlier," he went on. "The back-up doesn't have self-contained emergency power, so we can let it go for a while. But we'll have to get there before long, in case some Sore survivors try for it too. I'd rather not destroy it, we'll need communications *when* we have control." He stressed the word *when* to drive the word *if* out of their minds.

"The rest of us will head for the power plant. Our job will be to take it over and give Conover a chance to put it out of operation for a while. Any damage that is done there we'll let him do." Conover winced again. "He'll know what he's doing. We won't. All we'll be there for is to give him cover while he does his dirty work."

"This damage control works both

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ways, doesn't it, Captain?" Conover said.

"I guess it does," Travis replied.

"Somehow I don't like the idea of damaging the ship, even if it is one of theirs," Conover said. "You know, sort of a professional pride I hate to go against."

"It won't be their ship for long," Travis told him.

"Captain," Jack Ivster asked, "wouldn't it be easier to explode the grenades and let the air escape before we raided the power plant?"

"Well, yes," Travis answered, "from the standpoint of raiding the power plant alone. But I don't think Sartain could ever make it to the bridge in time to stop them from getting a radio message out once the survivors realized what was happening. They've got emergency power on the bridge, you know, just like *Maggie*. If we knock out the the power and give them a taste of vacuum at the same time, we'll create enough confusion for the survivors that they'll never be able to tell their buddies what's happening. Sartain should make it to the bridge pretty easily after two catastrophes in a row." Then after a moment he added to himself, I hope.

"Okay," Ivster said, "I see your point."

"How badly do you want to to hurt the power plant?" Conover asked.

"Just badly enough to knock it out," Travis said. "We won't be able to stand guard over it, so make sure that it can't be turned back on if any of the Sores get there. We'll have our hands full with the ones who are left."

"I think I got the idea," Conover said.

"Now, each of you get the supplies you'll need from what we've got, and then we'll try to get some rest," Travis said. "I know we can't really relax in this heat, but try anyhow. We'll need all the rest we can get."

"How soon will we start, Captain?" Maryb Pharr asked, having already gotten what equipment she needed: a blaster, two bandoleers of clips and a stubby laser rifle.

"We can't wait too long," Travis said. "This heat'll wear us down, and we don't have water for long. Let's say they spend two, no, three hours checking out *Maggie*. I doubt they'll spend any longer. Give them an hour to get under way. We don't dare leave here until the routine had settled down some. Say, about four hours from now should do it. If we wait much longer we won't have time to pull it off before they catch up with the others — assuming they can, this side of Nonspace."

"Why do you say that?" Padge asked.

"Well," Travis answered reluctantly, wishing the subject had not been brought up, but knowing he had to give an answer now, "the Sores are scatting like hell-bats to catch the Columbiad, and Pallas is going to Jump just as soon as the ships have built up potential enough. The Sores'll jump right behind them. This ship may not catch up with them before they Jump."

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"This one'll Jump too, though," Conover added over his shoulder as he bent over the pack of grenades. "They'll give them the coordinates and they'll do their best to come out at the same spot."

"We'll just have to do our damnedest to take her before she Jumps," Travis said.

"What if we don't?" asked Padge, a worried look on her face.

"We'll take her in Non-space, if we have to," Travis answered.

"Go powerless in Non-space?" Bream cried. "Are you crazy?"

Conover came to his feet and spun toward Bream, the palm of his hand lashing out against his cheek. Bream stumbled back, stunned.

"Watch it, mister," Conover said coldly. "That's the captain you're talking to. You could be shot for that."

"For Earth's sake, man," Bream said after a moment, only his fear controlling his anger, "we might pop out of Non-space anywhere in the universe."

"And we might not," Conover said. "You can't predict what'll happen."

"But — " Bream began.

"But nothing!" Conover almost yelled, menacing Bream with his fist. "Would you rather wait till we got back into normal space right in the middle of the Soarian fleet and then try to take the ship."

"That's enough," Travis said. "If we have to take her in Non-space, we'll do it and risk an unplanned break-out. But we won't if we can help it.

"Now try and get some rest," he said with finality, lowering himself to the warm deck.

Padge slowly sat down beside him and placed the palm of her hand on his forehead.

"Do you love me, ugly?" she asked softly.

"Passively," he answered, "but not actively right now."

"Not actively?" she said in mock surprise. "Roger Bream wouldn't answer me that way."

"Padge!" he answered in the same tone. "Right in public, too!"

"I can't stand Bream in public, private or anywhere else," she said. "I think Maryb feels the same way." She gestured with her head.

Out of the corner of his eye Travis could see Bream kneeling beside Maryb Pharr, whispering into her ear. Maryb was ignoring him with great deliberation.

"Where's Jack Ivster?" Travis asked, half sitting up.

"I wondered the same thing," Padge told him, "until I noticed that Muse Hunter was gone too."

"They'd better not leave this compartment."

"They won't. They just wanted a little privacy."

"They won't find it here," Travis said. "I didn't know there was anything between them."

"You'd better rest, ugly," she said softly. "You're going to need it more than the rest of us."

Travis looked back at her, smiled and then closed his eyes.

With all the power of his mind he tried to sweep clean his thoughts, to think of nothing, to lie there like

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a mindless animal and rest, conserving his energy, and wait. But his mind would not erase, not fully. A lifetime of impressions, thoughts and sensations crept up unbidden from his subconscious, a lifetime dedicated to but one purpose, or rather two purposes that were one, to Survive and to kill Sores, to weaken their empire so that one day his descendants might avenge their long-dead Earth. *To survive to avenge.* That was the motto by which he had lived and by which he would die.

So many people like Roger Bream and their more eloquent and intelligent spokesman, "the philosopher" Habert Darton, said that such a philosophy of life was sick, was insane. Well, maybe it was. But then, what else did the human race have to live for? At least that part of the human race called the Columbians, the nomads of space, the worldless people who had sworn, seven centuries before, to see Earth avenged. Maybe it was sick, he thought, but it was a sick galaxy that had seen a whole planet and billions of innocent people snuffed out because of mistaken identity, a super blunder by a master race so obsessed with galactic empire that it didn't stop to investigate.

But aren't we as sick as the Sores? a part of his mind asked. We're out to do the same thing, aren't we? It's different, he told himself. We *know* who we're after. And we didn't ask for this. We're stuck with the situation. Well, that same part of his mind said, couldn't we do what Bream wants to do, find some Earthlike world on the edge of the galaxy and mind our own business? For how long? he asked. They know that there are humans still alive, Beasts of the Pillar, they call us. And sooner or later they'd track us down and destroy us. Well, we have no choice, like it or not, we've got to keep moving and some day, somehow, destroy them before they can destroy us. It's that simple.

And then, without being aware of it, he fell into a fitful sleep, a sleep filled with the face of his eldest uncle and the alien Soar th'Dawnt and the now derelict *Maggie's Anger,* floating without purpose among the hostile star.

VIII

They are not demons, though some would say they are. They are but the children of dim redness and cannot see well. Though we must hate them, we must also understand them, and when their day comes, we shall dispatch them with mercy.

—*Columbiad,* Book III, iv

An alarm clock in his brain woke him exactly four hours later. He opened his eyes to see Padge sitting beside him, talking in whispers to Muse Hunter. In her voice was a note of anxiety. There was tension in the compartment, anticipation. The time had come for them to act, and they all knew it. They were waiting for him to give the orders.

"Duncan," Padge said, "are you awake?"

Travis nodded and sat up.

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"I was just about to wake you," Padge told him. "It's about time to get started, isn't it?"

"Just about," he agreed.

"The ship got under way a little over an hour ago," Conover said from the darkness. "They're following your schedule."

"Good," Travis said, standing up and shaking off the last vestages of sleep. "Are you ready, Colen?"

"I guess so, Captain," Colen answered, wide awake, inspecting a small tool box he had brought with him from *Maggie's Anger*.

"Get Bream and Reuben and get going. For Earth's sake, be careful."

"We won't get caught," Colen said. "I'll go first," he told the two others who had joined him. "Bream, you follow me in two minutes, and Reuben can come two minutes later. Go down the corridor and stop at the first service hatch you see. That's where I'll be."

"Good luck," Travis said to Colen's retreating back.

Soon the three men had gone, crept into the bowels of the starship to begin their work of jamming the release bars of the ship's automatic vacuum sealing equipment.

"It looks like it's my turn," Conover said, picking up his pack of grenades. He had left half a dozen of the small grenades in a neat pile on the deck.

"Do you need any help, Enge?" Jack Ivster asked.

"I'm not sure," Conover answered. "I may."

"That's my job," Padge said.

"You're staying here," Travis told her. "Your job is to work the detonator."

"I'll go," Ivster said, looking toward Travis for permission.

"Go on," Travis replied while Conover moved toward the hatch. "Get it done as quickly as you can," Travis added as the two men slipped from the compartment.

"Now what?" Muse Hunter asked.

"We wait a while longer," Travis answered. "They should all be back within an hour. In the meantime we can check out our weapons and do what we have to do to get ready."

It was a long, slow forty-five minutes that they waited in the hot, humid compartment before the hatch opened again, swinging slowly inward, but it was not one of Travis' party who entered.

The Daughters of th'Dawnt have been variously compared with a serpent of Earth-time history or a centaur of Earth-time mythology. There were certain similarities.

The Sores were mammalian, though at first sight one was not certain of it. Their ancestors had been aquatic or amphibious creatures, born in the lakes and swamps of the humid world of th'Dawnt, and in the process of their evolution they had taken on certain reptilian characteristics. For example, the head looked more like that of an Earth-time crocodile than anything else, long snouted, slick, earless, with a huge, gaping, tooth-filled mouth.

The creature's body as such was

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a full two meters long from the tip of the short, thick tail to the torso that rose erect, centaurlike above the forelegs. The long, thin body was equipped with four stubby legs, and the feet were webbed and clawed. The upper body was more manlike, with long, humanoid arms, hands and opposable thumbs. Above the humanlike shoulders the huge head rested on a short, thick neck. Perhaps most disconcerting of all the features of the Sore th'Dawnt were the two pairs of mammary glands that adorned the chests of the all but naked, dominant females of the race, a ghastly caricature of one of woman's loveliest features.

The alien was half way into the chamber before she sensed the presence of the humans. Turning quickly toward the source of their illumination, the Sore emitted a high-pitched squeal of warning or fright.

Travis came to his feet almost instantly, grabbing up the torch that sat on the deck and flashing it into the alien's eyes. At the same moment Maryb Pharr was rising, pulling a short knife from the folds of her loin cloth, a knife that no one had suspected she carried. She flipped it through the air.

Stumbling backward, blinded by the sudden light, the Sore caught Maryb's knife full in the chest, in her upper right breast, coughed once, staggered and squealed one final time. Travis leaped forward, Mikel Sartain behind him, and together they pulled the dying alien behind a pile of cartons.

"Dammit!" Travis muttered. "Was she alone?"

"Yes," Maryb answered, breathing heavily and quivering.

"How long will it take her to be missed?" Sartain said.

Travis shook his head. He had no answer, but hoped it would be a while. If they were caught now, he began the thought, but refused to finish it. They had no choice.

After hiding the Sore's body as well as they could, they cut off the torch and waited silently for the others, weapons ready.

Ten minutes later Conover and Ivster returned without the pack of explosives.

"It's done," Conover said.

"Any trouble?" Travis asked, not mentioning the Sore who had come into the compartment.

"None, but we could have used twice that many grenades and still not had enough."

"Show Padge how to work the detonator," Travis told him.

Taking a small radio transmitter from a pack on the deck, Conover handed it to the girl. Her hands shook as she accepted it.

"The fuses I put in the charges are radio controlled," he explained to her. "They'll only go off if you send the proper code. Now, all you do is turn it on here. Like this. Then when you're ready, push this button. That transmits the detonating code."

"That's all?" Padge asked.

"That's all," Conover agreed. "When you do it, better than a dozen holes will be punched through both hulls, and this place'll run out of air in a hurry."

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"Okay," Padge said doubtfully.

Travis glanced at his watch. "I wish Colen would get back."

"They had a big job to do," Conover said.

Again they waited silently in the darkness, and after a while they heard sounds in the corridor outside the compartment, sounds that Travis soon recognized as the shuffling of a heavy, four-footed body. The sounds stopped outside the compartment's hatch.

The hatch squeaked slightly as it was opened, and a dim red beam of light entered. Silhouetted against the corridor's lights Travis could see the form of a Daughter of th'Dawnt standing in the open hatch.

"Squeeee taw?" the alien's high pitched voice sounded, as she moved her beam of light across the piles of cartons. *"Hass tuo taw?"*

When there was no answer the alien apparently decided that her searching that particular compartment would yield nothing, slammed the hatch closed and shuffled on down the corridor.

Travis sighed and, after a few moments to regain his composure, told Conover and Ivster of their previous visitor.

Forty-five minutes had passed since Conover's return when the big maintenance man came through the hatch. There was an unpleasant expression on his face when Conover turned the torch back on.

Travis spoke first: "What is it?"

"We made it," Colen said. "They're jammed good."

"Where are the others?" Travis demanded.

"That damn Bream!" Colen said. "He got to foolin' with something he shouldn't. Touched off an alarm."

A chorus of gasps went through the room.

"A low level one," Colen said quickly. "None of the Sores came to check it out, but they sent a 'bot to look at it."

"Earth!" Conover said.

"The damn' machine came in so quiet we didn't even hear it," Colen said. "It thought Bream was a piece of junk and started to cart him off, and you know them damn' scurry-bots ain't gentle. Broke both his legs before we dismantled it."

"That damned fool," Travis said. "If he survives this I may kill him myself."

"Well, we stopped the 'bot," Colen went on, "but if it don't report in after a while they'll send some Sore to see what happened to it."

"What about Bream? Did you leave him there?"

"Had to," Colen said. "Reuben stayed with him. What're we gonna do?"

"Just what we had planned," Travis said. "We're running behind already. Get into a spacesuit and then take Bream and Reuben's spacesuits to them. Now. We're going." He turned to the the remainder of the group. "Now, everybody suit up. Conover, Ristig, Ivster, Maryb, you're with me."

In a few minutes all of them were in spacesuits, and Colen was leaving, carrying suits for Bream and Reuben. Travis handed each of

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his party one small grenade, cautioning them about its use.

"All right," he said before snapping his helmet closed, "the minute the lights go out, Padge, hit that button and hold tight. Then, Sartain, you take Muse and Winans and head for the bridge. Knock out that radio." He handed Sartain the remaining grenade. "If they get word out, we'll never make it. Padge, you sit tight. We'll come back for you as soon as we can. Sartain, once you've got the bridge, hold it. We'll meet you there. Then we'll start mopping up. Everybody got it? By the way, maintain radio silence until the power's off. Then we can talk."

Heads nodded all around.

"Be careful, ugly," Padge said.

Travis clamped his helmet tight, looked back at Padge for a moment, then motioned for the others to follow. As he left the compartment his mouth was strangely dry and his heartbeat unusually fast.

IX

The power plant was nearly a hundred meters directly to the rear of the cargo compartment in which the Columbians had hidden. Travis's party made half that distance without trouble.

Then a Sore technician stepped out into the hall before them — and hell began to break loose.

The alien stepped halfway out of the hatch, its dark, brilliant eyes gleaming in the dim red light. Its mouth opened for a moment, smitting a high, squealing cry. Then it turned with unexpected agility and

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dashed back into the cabin.

Travis swung up his laser rifle, pulled off a shot. The beam of heat met the closing hatch, showering the corridor with heat and bits of molten metal.

"Get her!" he cried, knowing that the others could not hear him.

Instantly he was at the hatch, kicking it open before the creature inside had time to latch it shut. His laser fired again, this time finding the pseudoscaled body, tearing into the fleshy muscle of the Sore's right foreleg. The creature fell half forward, screaming, clutching toward a weapon that hung from a peg on the bulkhead. Travis fired again, dead center between the female Sore's upper breasts. She collapsed, her hand releasing its tentative grasp on the weapon.

Looking up, Travis saw the cabin's communicator, a dim violet glow coming for its pilot light, indicating that the communicator was on and someone, something, had heard the fight. His laser beamed once more, and the communicator dissolved in smoke and molten metal.

"Now!" he screamed, his voice sounding even outside his helmet. "Get that generator."

Even as Travis yelled, a warning came through loudspeakers in the Soarian language. *"Staa hei thorm,"* the high alien voice said. *"Heiss mathou staieen, refou."*

Moments later the five were in the corridor again, running as fast as they could toward the supposed location of the ship's power plant, and through his helmet Travis could hear the wailing of an alarm and the even louder shout of command. There was suddenly terrible confusion in the Soarian warship, greater confusion than his killing a technician alone could have caused.

Only seconds had passed when Travis discovered the reason for the confusion.

The savage hand of the Jump drive tore at his stomach, topological madness replaced the smooth bulkheads of the corridor, red light faded into gray mist. The Soarian starship was leaping into Non-Space.

Someone, realizing that the humans were on the ship, had tried to prevent the Jump, but it had been too late, the count-down had gone too far. The ship had leaped into Non-space too soon.

"To hell with it!" Travis yelled silently.

Heartbeats passed, and the transition was complete. Travis knew that outside the ship the blackness and stars had been replaced by the infinite gray nothingness of that stillborn universe. They would have to capture the ship in Non-space and risk the consequences. Finding the deck solid beneath his feet, Travis ran on.

Eternities passed as they dashed toward the power plant, ages had gone by when they saw, in the distance, a hatch stenciled with the Soarian symbol that meant, in human terms, "Admittance to Authorized Personnel Only."

Running the harder at seeing their goal, Travis called up some unknown reserve of strength. The wailing alarm, picking up again after

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the Jump, screamed the louder through his helmet. Give the Sores another couple of minutes, he thought, and they'll all be in spacesuits.

Suddenly the hatch opened while they were still a good three meters away, and two spacesuited Soarian guards leaped out, long ugly energy rifles in their upper extremities.

"Hit it!" Travis screamed, throwing himself to the deck, firing his laser rifle even as he fell.

The aliens' weapons returned the fire, and Travis heard something like a muffled scream. Out of the corner of his eye he saw Dana Ristig go down, clutching at a smoldering hole in his chest. Beside him Maryb Pharr, kneeling in a position one often sees in training classes, her rifle carefully supported by her left hand resting on her right knee, took aim. Her laser sputtered. One of the Sores pitched backward as much as her anatomy would allow, and died.

Travis's own rifle sputtered again, a bolt of heat smashing through the other Sore's helmet, searing its broad forehead, frying its brains.

Then he was on his feet again, not looking back to see if the others were still with him, leaping across the bodies into the large nuclear generator chamber.

A dozen female Soarian technicians had hastily grabbed up weapons and were running for cover even as Travis leaped into the room. Flipping the rifle to continuous, he swept the room with a beam of coherent light and heat, flaying the flesh from the bones of one Sore, decapitating another.

Return fire began, a bolt of heat striking the deck centimeters from his feet. Travis leaped to one side, drawing his pellet throwing blaster as he fell.

"Blasters!" Travis yelled, taking aim at one technician who hid behind a large work table covered with electrical diagrams. The hand weapon coughed, spitting an explosive pellet that smacked headlong into the middle of the table. A mutilated Soarian corpse pitched backward from the explosion.

Other blasters joined Travis's, throwing explosive pellets into Soarian hiding places, destroying, filling the chamber with smoke and scorched flesh.

Then Travis was on his feet again, motioning for the others to follow. They had the advantage now, but if they stopped they would surely lose it and be at the mercy of the Soarian guards who must at this moment be rushing toward the generator room.

Maryb Pharr was running, right behind Travis, when a well aimed laser caught her hip, cutting her legs out from under her. As she fell her blasters answered the laser. Three pellets plunged into a bank of lockers. Two Soarian technicians died.

Glancing behind him, Travis saw Conover rise to his feet, carefully take aim with his laser at a control panel while Travis and Ivster covered him with the fire of their blasters. Then Conover's laser sputtered once. Its beam ate into the entrails of the control panel. There was a tre-

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mendous electrical arc — and the ship plunged into powerless darkness.

The entire starship bucked, twisted, turned, teetering on the brink of the aborted universe called Non-space. The thin, tenuous, non-material ties that somehow still bound it with the real universe threatened to pull it back, jerk it at random into the galaxy-filled cosmos where the speed of light was a limiting factor.

Travis felt the sickening grip on his stomach that told him that the ship was at the mercy of whatever laws there were that governed Non-space. Now the mindless menace of Non-space could do with them what it would — pitch them headlong into real space anywhere in the universe, or leave them be, as its whims decreed. But the die had been cast.

Then the hand released its grip on his intestines and reality abruptly returned. They were still in Non-space. Maybe they'd make it yet, he thought.

Unthinkingly, he began to rise, and suddenly found himself leaving the deck, turning end over end, floating upward in the darkness. It took him a moment to realize that the ship's artificial gravity had gone off with the power, something he had failed to take into his plans. He hoped that it would not upset things too much.

Moments later light appeared in the chamber. Conover's big torch flared into life as he rose too, tumbling like Travis in the sudden and unexpected weightlessness.

Catching himself on the nearest bulkhead, Travis pushed himself backward toward the deck and turned on the electromagnets in the soles of his boots. At the same time he cut in the radio of his spacesuit, hoping the others would remember to do the same.

Even before Travis's feet found the deck there was an explosion somewhere near the power plant, shaking the chamber savagely. Then, from a distance, other charges blasted through the starship's hull. Through his helmet Travis could hear the whistle of air as it rushed out into the vacuum.

"I set one close by," Conover's voice said in Travis's headset, as Conover himself came back to the deck less than a meter from him, his magnetic boots making contact. "I figured we'd need it."

"We did," Travis replied. By the light of Conover's torch he saw Ivster regain his footing on the deck and saw that the remaining Sores, tumbling freely in space, were dead or dying as the air pressure dropped to zero.

"What about Maryb?" Conover asked.

"Dead," Travis said calmly, fighting to keep emotion from his voice. "So's Dana Ristig."

"I know," Conover replied, his voice hollow.

"What was it? Travis asked himself. Some poem from dead Earth kept alive in the songs of the Columbiad. How did it go? " . . . When the journey's over there'll be time enough to sleep."

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"Let's get the hell out of here!" he said savagely.

Other spacesuit radios crackled to life, and Travis heard the voice of Mikel Sartain getting his party started toward the bridge.

"Hurry," Sartain was saying. "We've wasted too much time already."

"Lead the way," replied a feminine voice that must have been that of Muse Hunter.

Moments later the rough voice of Fargo Colen yelled from another part of the ship, "Reuben, look over there."

"God," Reuben replied and stared blankly.

"Sores!" said still another voice that Travis tentatively identified as that of Roger Breams. "Damn!" the same voice cried, followed by a strangled cry.

"Get 'em," Colen screamed. "Damn 'em to hell, get 'em all this time!"

"This way," Mikel Sartain yelled above the others as he led Muse Hunter and Mahlon Winans toward the bridge.

"What's happening?" Padge Starr asked from the cargo compartment, but no one answered her. They were all too busy.

Travis led Conover and Ivster out of the darkened power plant, kicking himself loose from the deck and sailing down the corridor, fending himself away from the bulkheads with his outspread arms, flying like a mythological god toward the disembodied voice. The two others followed him, Conover's torch lighting the way.

On their way back to the cargo compartment, they met only one dazed Sore, one of the undersize male prostitutes kept on the ship for the pleasure of its officers, drifting free in a corridor, unable to orient himself in the dark weightlessness. Conover's brilliant torch blinded the spacesuited alien, and Ivster's angry blaster killed him before he realized what was happening.

Moments later Travis stopped his headlong plunge by grabbing the hatch leading into the cargo compartment, swung open the door and yelled: "Padge!"

"Is that you, ugly?" Padge cried.

"It's me," he answered. "Get a gun and come on."

As Padge joined them the suit radios burst into life again; Mikel Sartain's party had reached the bridge.

"Cover me," Sartain's voice was saying. "I'm going in."

"Be careful," Muse Hunter cried.

Into this broke Fargo Colen's voice from his hiding place, "Reuben, behind you!"

Then Sartain again: "There," he cried triumphantly.

"He got it," Mahlon Winans yelled.

"Mikel!" cried Muse Hunter.

Then a strangled scream, a male scream of pure and total agony, a human cry of pain and death.

Duncan Travis's blood ran cold.

"Mikel, Mikel," sobbed Muse Hunter.

"Later," screamed Mahlon Winans from the bridge. "Muse!"

"I see it," Muse replied.

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"Oh, God," Travis said under his breath, kicking himself free of the deck, plunging into the darkness, Padge, Conover and Ivster leaping behind him, flying down the dark corridor toward the screams and agony.

"Captain?" a rough voice said through Travis's headset a few moments later.

"Go on, Colen," Travis replied.

"Reuben and me are comin' out to help," the maintenance man said. "They did send in a couple of Sores to see what happened to their 'bot. We finished 'em off, but they got Bream."

"Dead?" Travis asked, already knowing the answer.

"He won't never get them girls now," Colen replied.

"Hit it toward the bridge, Colen," Travis said. "They need our help." Then he said, "Sartain, can you hear me?" never expecting to hear Mikel Sartain's voice again.

"This is Muse Hunter, Captain," came a reply, her voice bearly under control. "Mikel is dead, but he got the radio. Mahlon and I are still on the bridge. We can't get out. There are Sores outside right now. They're starting to cut their way in."

"Here they come," Winans' voice cried.

"Colen," Travis yelled, "hurry."

"We're on our way, Captain," Colen answered.

Before Travis could speak again a barrage of energy beams tore down the corridor from the darkness before them.

"Sores!" Padge cried.

"They see our light," Travis yelled to Conover. "Cut it!"

Even before he had finished Conover had turned off the torch and thrown out his hands to brake himself against the bulkheads. Travis and the others did the same, awkwardly bringing themselves to a halt, using their magnetic boots to bring them "down" to the deck. The blasters and lasers of the four humans began to return the fire.

"Captain," Jack Ivster said, "I'm going to try something. Stay put."

Travis did not reply, but could see Ivster kick himself away from the deck and bounce against the bulkhead, then propel himself forward in the flashing light of the almost continually firing weapons.

Ivster had gotten perhaps five meters down the corridor before a laser beam cut away his right arm. arm.

"Hell!" he screamed in agony, air and blood bursting out into the vacuum. Throwing away his blaster with his left hand, Ivster grabbed the grenade from a pouch on his side. His dying motion was another kick against the bulkhead, propelling him toward the Sores. Another energy beam lanced into his chest; he never felt it, and it did not slow the plunge of his body into the aliens.

For a moment the corridor was lighted by the explosion of the grenade. Then again there was darkness and silence. The Soarian weapons did not fire again.

"Let's go," Travis yelled.

"Captain," Colen's voice came.

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"We got 'em between us and the bridge, but we need help."

"We're coming," Travis answered, flying down the corridor toward the bridge.

Ages later the three reached their destination, found nearly a dozen spacesuited Sores pinned down by the fire from Colen and Reuben in the corridor, a few meters from the huge hatches that led into the bridge, and the sporadic fire from inside the bridge itself.

As Travis savagely pulled himself against a bulkhead and fired toward the bunched aliens, he saw an energy blast take Delk Reuben in the stomach, heard the young crewman's scream as he pitched backward, his body enfolded by flames fed by the oxygen escaping from his torn suit. A second energy blast destroyed his helmet, and the screaming stopped.

Jerking his own grenade from its pouch, Travis pushed out into the middle of the corridor. Pitching the grenade into the assembled aliens, Newton's Third law of Motion propelled him away from them amid a shower of energy beams. Conover, an instant later, repeated the same act. Two explosions, one following the other, threw bits of Soarian flesh down the corridor. Blasters and lasers poured a stream of hell into the flames and gas.

Travis shakily brought himself to a halt, turned around and flashed his torch at the spot where a moment before the aliens had been. What was left was not pleasant to look upon.

Kicking against a bulkhead, he floated toward the open doors of the bridge. Conover, already entering, beamed his torch on Muse Hunter, rising from the ruins, her magnetic boots gripping the deck. The scorched form of Mikel Sartain hung still, half a meter from the ruined radio gear, and the twisted body of Mahlon Winans could be seen near it. But the bridge was in human hands.

"Well," Travis said in a weak voice, "we made it." There was little triumph in him.

"How many Sores are left?" Padge asked hesitantly.

"Can't be many," Conover answered, turning his face away from the desolation. "Shouldn't have been more than a couple of dozen in spacesuits, and they would have headed for the bridge. I think we've got most of them."

Turning to Colen, Travis spoke. "You and the girls take care of the bridge. Conover and I will see about the back-up radio equipment. The worst of it's over."

X

It is well that we fight now, for there must be strife before victory. But what becomes of us after the fighting? What shall we do with our victory?

Columbiad, Book IV, xix

Six months later *Maggie's Anger II* hung in a low orbit above a dry, desiccated world of a red dwarf sun, a world called Meeting Place, and waited for the Third Columbiad to join her.

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It had been a long, hard journey, a battered spaceship with a crew of five, but they had made it there, and on time, and now they waited.

Duncan Travis stood on the bridge, dressed in black boots, gray trousers, and a gray, fur-trimmed jacket and looked at the view screens that showed scenes of the desolate landscape below them.

"Was it worth it, ugly?" Padge Starr asked.

"It was," Travis answered after a while, thinking of the seven who had died taking the ship from the Soar th'Dawnt, thinking that they had given their lives for a purpose, and to deny the worth of it would deny the worth of their lives, and their deaths. "It was worth it, Padge," he said. "Now the Third Columbiad has eight ships again, and when the others get here we can go back and salvage the old *Maggie*. Then we'll have nine."

"But isn't the maximum for a Columbiad eight?" she asked.

"That's the rule," he commented, not having considered it before. "No more than eight ships together at one time. We can't risk more than that."

"Then they'll have to form a new Columbiad," she said. "The Fifth Columbiad."

"I guess so," Travis said. "I don't believe we've had a new Columbiad in over two hundred years."

"Who'll be the new High Captain, I wonder," Padge said softly. "Captain Unra of the *Hateward* is the oldest, isn't he?"

"Who captured the ninth ship?" Enge Conover asked, entering the bridge, a smile on his face.

"You did, ugly," Padge cried. "Oh, Duncan, you'll be the new High Captain."

"The Combined Council of Elders will have to vote on it," Travis said.

"A formality," Conover told him. "They'll sing songs about this for a thousand years, *sir*."

"I doubt it," Travis said, "and don't call me *sir*, for Earth's sake. I'm not High Captain yet."

"Modesty?" Conover laughed. "From Duncan Travis of all people."

"Duncan," Muse Hunter said, sitting before the laser-radar screen, "there are seven objects entering the system. I think it's the Columbiad."

"Try to contact High Captain Pallas, please," said Duncan Travis, High Captain of the Fifth Columbiad, looking out at the endless stars and trying not to think of the job ahead.

END

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